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THESIS

MITIGATING THE MANPADS THREAT: INTERNATIONAL AGENCY, U.S., AND RUSSIAN EFFORTS

by

John R. Bartak

March 2005

Thesis Co-Advisors: Mikhail Tsypkin
Edward J. Laurance

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There are in excess of 500,000 Manned Portable Air Defense Systems (MANPADS) in worldwide inventories including several thousand outside of government control. MANPADS are surface-to-air missile systems enabling the operator to launch missiles at aircraft from the ground. The most common MANPADS are the Russian SA-7 and U.S. Stinger, which feature infrared guidance systems. The concern that MANPADS can easily be acquired by non-state actors' intent on downing civilian and military aircraft has led international agencies, the U.S., and Russia to implement measures to reduce the risk of a MANPADS attack. International agencies such as the Wassenaar Arrangement work to stop illegal MANPADS proliferation. The U.S. MANPADS Defense Act and the U.S. Department of Homeland Security have implemented measures to counter the MANPADS threat. Russia has revised its export controls and forged a counter-proliferation agreement with most CIS countries. However, the multilateral initiatives to better control MANPADS stocks and transfers are far from comprehensive. A new approach to mitigating the MANPADS threat adopts elements from the 1997 Mine Ban Treaty and the Landmine Monitor. The conclusion of this thesis is that if MANPADS counter-proliferation efforts remain status quo an attack on a commercial aircraft in the western world is imminent.

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MITIGATING THE MANPADS THREAT: INTERNATIONAL AGENCY, U.S., AND RUSSIAN EFFORTS

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Lieutenant, United States Navy
B.S., Excelsior College, 2003

Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

There are in excess of 500,000 Manned Portable Air Defense Systems (MANPADS) in worldwide inventories including several thousand outside of government control. MANPADS are surface-to-air missile systems enabling the operator to launch missiles at aircraft from the ground. The most common MANPADS are the Russian SA-7 and U.S. Stinger, which feature infrared guidance systems. The concern that MANPADS can easily be acquired by non-state actors intent on downing civilian and military aircraft has led international agencies, the U.S., and Russia to implement measures to reduce the risk of a MANPADS attack. International agencies such as the Wassenaar Arrangement work to stop illegal MANPADS proliferation. The U.S. MANPADS Defense Act and the U.S. Department of Homeland Security have implemented measures to counter the MANPADS threat. Russia has revised its export controls and forged a counter-proliferation agreement with most CIS countries. However, the multilateral initiatives to better control MANPADS stocks and transfers are far from comprehensive. A new approach to mitigating the MANPADS threat adopts elements from the 1997 Mine Ban Treaty and the Landmine Monitor. The conclusion of this thesis is that if MANPADS counter-proliferation efforts remain status quo an attack on a commercial aircraft in the western world is imminent.

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EXECUTIVE SUMMARY

The U.S. State Department has estimated that since 1978 a total of 600 people worldwide have died in 24 commercial aircraft crashes attributable to Manned Portable Air Defense Systems or MANPADS. Although all deaths have occurred in combat zones, a terrorist attack with MANPADS on a commercial airliner in the western world is imminent if revised counter-proliferation efforts are not implemented.

MANPADS are surface-to-air missile systems enabling the operator to launch missiles at aircraft from the ground. The most common MANPADS are the Russian SA-7 and U.S. Stinger, which feature infrared guidance systems. MANPADS are relatively cheap, easily concealable, and readily available. It is estimated there are in excess of 500,000 systems in worldwide inventories, including several thousand thought to be outside government control or vulnerable to theft because of poor government controls.

The concern that MANPADS can easily be acquired by non-state actors intent on downing civilian and military aircraft has led international agencies, the U.S., and Russia to implement measures to reduce the risk of a MANPADS attack. The purpose of this thesis is to identify and analyze the effectiveness of current controlling measures in place to mitigate the MANPADS threat and to provide recommendations for future policy revision.

In December of 2003 the UN General Assembly approved the expansion of the UN Register of Conventional Arms to add MANPADS as a new category in the "missiles and missile launcher" group. Although a voluntary register, the UN listing provides transparency on which countries export, import, or hold the missile systems.

The thirty-three countries participating in the Wassenaar Arrangement, including all major arms suppliers (except China), have agreed to apply strict national controls on the export of MANPADS. The 2003 agreement called for adherence by member governments to several export control principles and assistance to states for the safeguarding or destruction of missile stockpiles. The Wassenaar principles were cited by the G-8 Summit in June 2003 and by the Organization for Security and Co-operation in Europe (OSCE) in May 2004.

U.S. efforts to reduce the MANPADS threat have led to passing the MANPADS Defense Act in 2004. The Department of Homeland Security has taken additional efforts to protect civilian aircraft from attack. In August of 2004, two civilian companies earned $45 million contracts to research the adaptation of military MANPADS countermeasure technology to commercial aircraft.

Russia has pursued improved multilateral transfer controls of MANPADS because of the MANPADS threat against its civilian and military aircraft in Chechnya. In November 2003, Russia reached an agreement with most CIS (Commonwealth of Independent States) to control the circulation of MANPADS. The agreement established new common standards in arms export controls in the region, including mechanisms to share information on transfers.

However, the multilateral initiatives to better control MANPADS stocks and transfers are far from comprehensive. A successful "new approach" for MANPADS counter-proliferation must adopt elements from the Anti-personnel Landmine Treaty. Specifically, elements of the Landmine Monitor must be adapted to counter MANPADS proliferation.

The conclusion of this thesis is that if MANPADS counter-proliferation efforts remain status quo an attack on a commercial aircraft in the western world is imminent.

I. INTRODUCTION

A. BACKGROUND

There are in excess of 500,000 Manned Portable Air Defense Systems (MANPADS) in worldwide inventories including several thousand outside of government control. [1]

B. RELEVANCE

The concern that MANPADS can easily be acquired by non-state actors intent on downing civilian and military aircraft has led international agencies, the U.S., and Russia to implement measures to reduce the risk of a MANPADS attack.

C. PURPOSE

The purpose of this thesis is to identify and analyze the effectiveness of current controlling measures in place to mitigate the MANPADS threat and to provide recommendations for future policy revision.

D. METHODOLOGY

The methodology of this thesis is policy evaluation. International agencies, the U.S., and the Russian Federation have developed and implemented different measures and policies to mitigate the MANPADS threat. This thesis evaluates these different measures and polices for their effectiveness in mitigating the MANPADS threat.

E. OUTLINE

Chapter II describes the MANPADS threat. The capabilities, durability, types, terrorist use, and sources of MANPADS are outlined. Chapter III identifies and critiques the international agencies in place to counter the MANPADS threat. The UN Register of Conventional Arms, Wassenaar Arrangement, G-8 Action Plan, APEC, and OSCE efforts to reduce the MANPADS threat are analyzed.

---

1 Sarah Chankin-Gould, "MANPADS Proliferation: Understanding the Problem," *Federation of American Scientists Issue Brief #1,* January 2004, <www.fas.org/campaigns/MANPADS>, accessed June 12, 2004, p. 1.

Chapter IV identifies and critiques U.S. efforts to counter the MANPADS threat including the MANPADS Defense Act, Department of Homeland Security, and U.S. foreign policy.

Chapter V identifies and critiques the Russian Federation's efforts to counter the MANPADS threat including Russia's export controls, CIS agreement, and western alignment.

Chapter VI focuses on "A New Approach to Mitigating the MANPADS Threat" and proposes using elements of the Anti-Personnel Land Mine Treaty (Ottawa Treaty) and the Landmine Monitor in MANPADS counter-proliferation efforts.

Chapter VII is my conclusion.

II. THE MANPADS THREAT

The ramifications of a successful shoulder-fired missile attack on a commercial airliner would make the September 11, 2001 terrorist attacks seem trite. "The casualty total of downing a passenger jet would only be in the hundreds but the socioeconomic cost would be far greater, deep in the hundreds of billions of dollars at least, depriving the world of rapid transportation and probably triggering a worldwide recession or depression."[2]

Casualties from simultaneously downing a handful of passenger jets with shoulder-fired missiles would still be well under those of September 11, 2001. However, the socioeconomic cost would be infinitely multiplied.

> The very survival of all air carriers, aircraft manufacturers, and their supporting industries would be endangered, as would those industries whose operations depend on air transportation. Civilization's ability to move people and goods rapidly over long distances could be lost.[3]

Security institutions and governments have acknowledged that manned portable air defense systems, or MANPADS, in the hands of terrorists pose a serious threat to the commercial aviation industry. While addressing the [APEC] forum, Secretary of State Colin Powell warned that "no threat is more serious to aviation" than MANPADS.[4]

Depending on the sophistication of the model, MANPADS are effective up to three miles in range and up to 15,000 feet in altitude.[5] Airplanes are safe at cruising altitude but vulnerable immediately after takeoff and before landing. Experts estimate that the window of vulnerability lasts about ten to fifteen minutes during takeoff and ten to fifteen minutes during landing.[6]

---

2 Robert Sherman, "The Real Terrorist Missile Threat and What Can Be Done About It," *Federation of American Scientists Public Interest Report*, Volume 56, Number 3, Autumn 2003, p.2. Robert Sherman is a principal in the consulting firm of Carr, Sherman, and Minjack and the former Director of the Advanced Projects Office at the Arms Control and Disarmament Agency.

3 Ibid.

4 Chankin-Gould, p. 1.

5 Sandra Erwin, "Man-portable Missiles Imperil both Military, Civilian Aircraft," *National Defense,* August 2003, Vol. 88, Issue 597, p. 28.

6 Ibid.

Since 1994, there have been ten high profile attempts to attack passenger aircraft with shoulder-fired missiles. Four commercial aircraft have been shot down and approximately sixty passengers killed.[7]

This introductory chapter outlines the MANPADS threat including the durability, types, and owners of MANPADS. The MANPADS threat to civilian and military aircraft is explained and the terrorist use of MANPADS chronicled. The chapter concludes by revealing the sources of MANPADS**.**

A. BACKGROUND

There are an estimated 500,000 MANPADS in the world today.[8] An estimated 50,000 to 100,000 MANPADS are on the black market and therefore accessible to terrorists and other non-state actors.[9] Their availability has led to an estimated 27 terrorist groups being in possession of one or more missiles.[10]

MANPADS are attractive to terrorists and insurgents because they are lethal, portable and concealable. They are approximately five feet long, three inches in diameter, and weigh between thirty and forty pounds.[11] They fit in a golf club bag, the back of a truck, or in the cargo area of a small boat. MANPADS can be fired by one person with just a few seconds of preparation after a relatively short training period.[12]

> With proper training, MANPADS are relatively simple to operate. All [that] the user has to do is visually acquire the target, and activate the automatic target lock and launch system by pulling a trigger. The missile then uses infrared [and] other seeking capabilities to home in on the target.[13]

---

7 Sherman, p. 3.

8 Chankin-Gould, p. 1.

9 Martin Landauer, "The Threat from MANPADS," *Jane's Homeland Security and Resilience Monitor,* October 1, 2003, p.1.

10 Thomas B. Hunter, "The Proliferation of MANPADS," *Jane's Intelligence Review,* September 1, 2001, p. 1.

11 "Surface-to-Air Missiles, a Selection of MANPADS SAM Systems Currently in Use," *Jane's Missiles and Rockets 1997 Edition,* Volume 1, Issue 8, November 1997, p. 5.

12 Based on the author's experience and training in portable missile system implementation. Duration of training for effective deployment depends on the potential user's experience with weaponry.

13 Chankin-Gould, p. 2.

Pilots fear heat-seeking missiles because the energy from IR-guided weapons often cannot be detected by the targeted aircraft.[14] A direct hit is required to do significant damage because of the lightweight warhead which is fused by contact with the target.[15]

MANPADS are also attractive to terrorists and non-state actors because they are relatively inexpensive. The black market is the primary source for illicit MANPADS transfers where MANPADS are generally sold from $30,000 to $70,000 but can cost as little as $5,000 each depending on the type.[16]

The core of the MANPADS problem is that tracking the proliferation of MANPADS is a difficult endeavor. Often, the only verification by use of non-state actors is the recovery of a used launcher or fragments from expended missiles.[17] Unlike state-to-state transfers, usually documented and visible, the illicit black market MANPADS trade defies accurate tracking.[18]

1. Durability

MANPADS actually have a durable shelf life. A popular misconception is that MANPADS become unusable after several years due to battery or other system failures.

> While it is true that all MANPADS batteries have a finite shelf life, these can be replaced with commercially purchased batteries available on the open market and technically proficient terrorist groups might also be able to construct hybrid batteries to replace used ones.[19]

The shelf life of MANPADS is largely dependent on the conditions in which the weapon is stored. However, under ideal (factory specified) conditions some versions can remain operational for twenty-two years or more.[20] So, while it can be assumed that

14 Erwin, p. 28.

15 Sherman, p. 3.

16 Landauer, p.1.

17 Hunter, p.1.

18 Ibid.

19 Ibid.

20 Ibid.

some weapons have not been stored in ideal conditions, many weapons previously believed to be inoperative, such as the Afghan Stingers may indeed be operational.21

Most missiles are hermetically sealed in launchers designed for rough handling by soldiers in the field.[22] Thus, the deterioration of missile propellants and seeker coolant is not necessarily going to happen over time. Temperature extremes are also factored into the design of MANPADS. "While these concerns merit attention, the commonly held assumption that these weapons have short shelf lives is erroneous."[23]

2. Types

Russian SA series MANPADS and U.S. Stingers are the most proliferated MANPADS and thus pose the greatest threat. The higher the nomenclature of Russian SA series MANPADS, the more technologically advanced weapon it designates. The SA-7 is among the least sophisticated and most highly proliferated MANPADS. It can engage aircraft flying above 50 meters and below 1500 meters but only when launched from behind the targeted aircraft.[24] It has an IR seeker which the missile uses to identify its target and home in on the infrared energy emission of the aircraft.[25] The SA-7 seeker can be fooled by simple countermeasures such as flares.[26] The missile's small 1.17 kg warhead detonates upon impact with a target less than 4 km away.[27]

The advanced Russian SA-7B has improvements in the guidance system allowing the missile to engage transport planes and helicopters head-on, unless the aircraft is flying faster than 540 km per hour.[28] The SA-7B can hit targets flying at much higher altitudes

21 Hunter, p.1.

22 Mark Phelps, "Do SAMS Pose a REAL Threat to Civil Aviation?" *Aviation International News*, January, 2003, p. 2.

23 Ibid.

24 "Kolomna KBM 9K32/9K32M Strela-2/Strela-2M (NATO SA-7 'Grail')- low-altitude surface-to-air missile system," *Jane's Land Based Air Defence*, MAN-PORTABLE SURFACE-TO-AIR MISSILE SYSTEMS, Russian Federation, posted 11 October 2004, <www.janes.com> online subscription service, accessed February 13, 2005, p.3.

25 Ibid.

26 Ibid.

27 Ibid.

28 "Kolomna KBM 9K32/9K32M Strela-2/Strela-2M (NATO SA-7 'Grail')- low-altitude surface-to-air missile system," *Jane's Land Based Air Defence*, MAN-PORTABLE SURFACE-TO-AIR MISSILE SYSTEMS, Russian Federation, posted 11 October 2004, <www.janes.com> online subscription service, accessed February 13, 2005, p.3.

(2300 meters) and as far away as 4.2 km.[29] The SA-14 features improvements to the missile's IR seeker reducing the effectiveness of flares as decoys and allowing the user to engage jet aircraft head-on.[30]

The SA-16 and SA-18 Russian Igla series are "smarter" MANPADS and have an IR-seeker that is specifically designed to distinguish between countermeasures and the targeted aircraft.[31] Both of these MANPADS have a maximum range of 5.2 km, and are able to engage targets operating between 10 meters and 3500 meters in altitude.[32]

The U.S. STINGER FIM-92 series A-D MANPADS are similar to the Russian Igla Series. The advanced models can target from head-on, behind, and on the side.[33] The system can engage a target between 200 and 4800 meters in altitude.[34] The missile travels at Mach 2.2 and is one of the fastest MANPADS.[35]

3. Owners

Perhaps the most unsettling MANPADS statistic is the list of non-state actors and terrorist groups who possess them. *Jane's Intelligence Review* estimated that MANPADS are now in the hands of up to 27 terrorist groups.[36] The following table shows both reported and confirmed non-state groups in possession of MANPADS from 1996-2001.

---

29 "Kolomna KBM 9K32/9K32M Strela-2/Strela-2M (NATO SA-7 'Grail')- low-altitude surface-to-air missile system," *Jane's Land Based Air Defence*, MAN-PORTABLE SURFACE-TO-AIR MISSILE SYSTEMS, Russian Federation, posted 11 October 2004, <www.janes.com> online subscription service, accessed February 13, 2005, p.3.

30 "Kolomna KBM Strela-3-low-altitude surface-to-air missile system," *Jane's Land Based Air Defence*, MAN-PORTABLE SURFACE-TO-AIR MISSILE SYSTEMS, Russian Federation, posted 9 February 2005, <www.janes.com> online subscription service, accessed February 13, 2005.

31 "Kolomna KBM and V.A. Degtyarev Plant Igla-1-low-altitude surface-to-air missile system," *Jane's Land Based Air Defence*, MAN-PORTABLE SURFACE-TO-AIR MISSILE SYSTEMS, Russian Federation, posted 9 February 2005, <www.janes.com> online subscription service, accessed February 13, 2005.

32 Ibid.

33 Ibid.

34 "Raytheon Electronic Systems low-altitude surface-to-air missile system family – FIM-92 Stinger," *Jane's Land Based Air Defence*, MAN-PORTABLE SURFACE TO AIR MISSILE SYSTEMS, United States, posted 9 February 2005, <www.janes.com> online subscription service, accessed Febrary12, 2005, p. 3.

35 Ibid.

36 Phelps, p. 2

Table 1. Non-state groups with MANPADS: 1996-2001[37]

(Note: Groups reported but not confirmed to have MANPADS are included. The following disclaimer applies to all entries for purposes of clarification: confirmed (c), reported (r).)

Armed Islamic Group (GIA)	Algeria	Stinger (c)
Chechen rebels	Chechnya, Russia	SA-7 (c), Stinger (c), Blowpipe (r)
Democratic Republic of the Congo (DRC) rebel forces	Received in Kinshasa	SA-16 (r)
Harkat ul-Ansar (HUA)	Kashmir	SA-7 (c)
Hizbullah	Lebanon	SA-7 (c), QW-1 (r), Stinger (r)
Hizbul Mujahideen (HM)	Kashmir	Stinger (r)
Hutu militiamen	Rwanda	Unspecified MANPADS (r)
Jamaat e Islami	Afghanistan	SA-7 (c), SA-14 (c)
Jumbish-i-Milli	Afghanistan	SA-7 (c)
Khmer Rouge	Thailand/Cambodia	Unspecified MANPADS (r)
Kosovo Liberation Army (KLA)	Kosovo	SA-7 (r)
Kurdistan Workers Party (PKK)	Turkey	SA-7 (c) Stinger (c)
Liberation Tigers of Tamil Eelam	Sri Lanka	SA-7 (r), SA-14 (r), Stinger (c), Hongying-5 (c)
Oromo Liberation Front (OLF)	Ethiopia	Unspecified MANPADS (r)
Palestinian Authority (PA)	Palestinian autonomous areas and Lebanon	SA-7 (r), Stinger (r)
Popular Front for the Liberation of Palestine-General Command (PFLP-GC)	Palestinian autonomous areas and Lebanon	Unspecified MANPADS (r)
Provisional Irish Republican Army (PIRA)	Northern Ireland	SA-7 (c)
Revolutionary Armed Forces of Colombia (FARC)	Colombia	SA-7 (r), SA-14 (r), SA-16 (r), Redeye (r), Stinger (r)
Rwanda Patriotic Front (RPF)	Rwanda	SA-7(r), SA-16 (r)
Somali National Alliance (SNA)	Somalia	Unspecified MANPADS (r)
Taliban	Afghanistan	SA-7 (r), Stinger (c)
National Liberation Army (ELN)	Colombia	Stinger (r), various MANPADS (r)
National Liberation Army (UCK)	Macedonia	SA-18 (c)
National Union for the Total Independence of Angola (UNITA)	Angola	Unspecified MANPSAS (r).
United State Wa Army	Myanmar	SA-7 (c), HN-5N (c)
United Somali Congress-	Somalia	Unspecified MANPADS (r)
Somail Salvation Alliance (USC-SSA) Osama bin Laden ('Al Qaeda')	Afghanistan	SA-series missiles (c), Stinger (c)

37 Hunter, p.4-5.

B. MANPADS THREATS

Testimony at a November 2003 State Department hearing summarized the reality of the threat to civilian aviation by MANPADS in the hands of terrorists:

> The threat posed by terrorists equipped with MANPADS is of credible concern. Indeed, the unsuccessful missile attack on an Israeli commercial airliner in Mombassa, Kenya, in November 2002 was a stark reminder of the threat posed by terrorists possessing MANPADS. MANPADS are widely available on black or grey markets around the world. Even an unsuccessful MANPADS attack on a commercial airliner would have a devastating economic and political impact. As you can well imagine, this is a serious and complex issue with no single solution. It is an issue of concern to the security of the homeland because MANPADS are relatively easy to operate and are small enough that they can be concealed in a vehicle.[38]

1. The Civilian Threat

In the last twenty-five years, 42 civilian planes have been hit by handheld anti-aircraft missiles.[39] Charles V. Pena, director of Defense Policy studies at the Cato Institute stated that the odds are on the side of terrorists. "The equation is skewed in favor of anyone hoping to wreak havoc by launching a missile at an American plane: the weapons are relatively cheap and plentiful, while potential deterrents, such that exist, are few and incredibly expensive."[40]

The unsuccessful MANPADS attack on an Israeli Arkia Boeing 757 on November 28, 2002 in Kenya has raised concerns worldwide in the civil aviation community that this type of terrorist attack may spread to other regions and target carriers from other nations.[41] "President Bush is so concerned that man portable missiles might be used against airliners that he is being briefed on the threat regularly."[42]

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38 Stephen McHale, "U.S. Believes Terrorists Still Pose a Threat to Civil Aviation," Testimony on "Aviation Security" given at U.S. Senate Committee on Commerce, Science, and Transportation, November 5, 2003.

39 James Lacey, "Al Queda's Next Big Thing?", *Insight on the News*, December 24, 2002 – Jan 6, 2003, Vol. 19, Issue 1, p. 52.

40 Tom Zeller, "Cheap and Lethal, It Fits in a Golf Bag," *New York Times*, October 26, 2003, p.4.

41 David Hughes, "US Knows Manpads Threat Needs Attention", *Aviation Week and Space Technology*, New York, December 9, 2002, Vol. 157, Issue 24, p. 28.

42 Ibid.

In June of 2003, three men were arrested in New Jersey by U.S. and Russian undercover intelligence agents for attempting to illegally purchase should-fired missiles to be used against commercial aircraft.[43] These arrests reinforce that "terrorists continue to pursue weapons [for use] against our aircraft."[44] This recent attempt by non-state actors to illegally purchase arms in the U.S. prolongs a twenty-year-old legacy.[45]

2. The Military Threat

Shoulder fired missiles became a menace to U.S. military aircraft operating in Afghanistan and Iraq even though the threat was ultimately downgraded from "high" to "moderate."[46] Air Force General John W. Handy, head of the U.S. Transportation Command, stated that "the man-portable threat is perhaps the greatest threat we [the U.S.] face anywhere in the world.[47]

Insurgent groups seek MANPADS because they are effective against attack helicopters and other aircraft that are used in counter-insurgency operations. As of 29 September 2003, there had been between 31-45 MANPADS firings at coalition aircraft since the end of major combat operations in Iraq.[48]

During a two-week period in the post-conflict phase of Operation Iraqi Freedom, Iraqi insurgents shot down three US Military helicopters with MANPADS or RPGs.[49] At least twenty-two personnel were killed by these weapons.[50] The casualties included the

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43 Victoria Samson, "Small Arms and Light Weapons: The MANPAD Menace?," Center for Defense Information, August 15, 2003, <www.cdi.org/manpads>, accessed September 18, 2004, p.2.

44 Ibid.

45 Edward J. Laurance, "The New Gunrunning," *Orbis: A Journal of World Affairs*," Foreign Policy Research Institute, Spring 1989, p. 227.

46 Erwin, p. 28.

47 Ibid.

48 David C. Isby, "Iraqi MANPADS Buy-Back Program is Underway", *Jane's Missiles and Rockets*, November 1, 2003, p.1.

49 RPG is an acronym for rocket propelled grenade. RPGs are portable, shoulder-fired weapons primarily used against tanks and helicopters. The launched "grenade" does not have a seeking capability like that of MANPADS thus success is dependent upon the operator's accuracy. The effective range of an RPG is considerably less than that of MANPADS.

50 "Man Portable Air Defense Systems (MANPADS)," Global Security, <www.globalsecurity.org>, accessed October 19, 2004.

downing of a Chinook CH-47 Helicopter by a Russian Strela 2 that killed three crewman and thirteen US soldiers while wounding another twenty-six soldiers.[51]

Iraq had been a large scale importer of Soviet-designed MANPADS before the 1991 Gulf War where the SA-16 proved to be Iraq's most effective single air-defense weapon.[52] During Desert Storm, IR missiles caused 56 percent of the kills and 79 percent of the damage to Allied aircraft.[53] Since then, there have been many opportunities for Iraqi MANPADS to be transferred to terrorist and other groups.

C. TERRORIST USE OF MANPADS

"The history of MANPADS usage by guerillas and terrorists underscores the efficacy of these weapons against both civilian and military targets."[54] The Congressional Research Service identified five cases in which large civilian turbojet aircraft were targeted. "In two of the five cases, the outcome was catastrophic – all people on board were killed."[55]

> Christopher Bolkcom, a Congressional Research Service Analyst, cited FBI estimates that there have been at least 29 instances in which civilian planes have been hit by shoulder-fired missiles, causing up to 550 deaths. Bolkcom also quoted a Rand report that concluded as many as 40 civilian airliners were shot down by these weapons between 1975 and 1992, causing up to 760 deaths. [56]

The following time line shows MANPAD terrorist use against commercial airliners and military aircraft from 1994 to 2003. The subsequent the table lists non-state use of MANPADS from 1996-2001.

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51 Ed Blanche, "MANPADS Threat Spreads as Iraqis Down US Chinook," *Jane's Missiles and Rockets*, December 1, 2003, p.1.

52 Isby, p.1.

53 "Man Portable Air Defense Systems (MANPADS)," Global Security, <www.globalsecurity.org> accessed October 19, 2004.

54 Chankin-Gould, p. 2.

55 Ibid.

56 Erwin, p.2.

1. Terrorists Use of MANPADS from 1994-2003[57]

- 1994 – A Falcon -50 executive jet carrying the Presidents of Rwanda and Burundi is shot down, igniting massive ethnic violence.
- 1997 – Rebels shoot down a Yugoslav government transport killing 5.
- 1998 – A Congo Airlines 727 airliner is shot down by rebels killing all 40 onboard.
- 1999 – Rebels in Angola shoot down a United Nations C-130 transport killing 14.
- 2001 – Rebels in Angola hit, but fail to destroy, a United Nations 727 cargo aircraft.
- 2002 – Two missiles are fired at an Israeli chartered 757 with 271 people onboard as it takes off from Mombassa, Kenya. The missiles are seen by the pilot as they fly by and miss.
- 2003 – At least two missiles are fired at a U.S. Air Force aircraft landing at Baghdad airport but miss.

2. Non-State Use of MANPADS from 1996-2000[58]

Table 2. Reported non-state use of MANPADS: 1996-2000[59]
(Note: list includes some significant events reported by press outlets.)

23 Oct 00	LTTE	Stinger	4/0	Mi-24 'Hind'	Shot down near Trincomalee harbour.
04 Oct 00	Chechen rebels	Stinger	1/0	Su-24MR	Shot down near Urus-Martan.
04 Oct 00	Chechen rebels	Stinger	Unknown	Su-25	Shot down on reconnaissance mission.
10 Aug 00	LTTE	Unknown	0/0	Fighter aircraft	Government aircraft fired at. No damage.
25-30 Aug 00	Chechen rebels	SA-7	0/0	Unreported	Federal helicopters fired on. All missiles miss.
07 May 00	Chechen rebels	Unknown	2/0	Su-24MR	Shot down in southern Chechnya.
31 Mar 00	LTTE	Unknown	40/0	An-26	Transport craft possibly downed by MANPADS.

57 Sherman, p. 1.

58 Ibid.

59 Hunter, p. 5-6.

10 Nov 99	FARC	Unreported	5/0	DC-3	FARC mistakenly downs civilian craft, press says.
04 Apr 99	Hizbullah	SA-7	0/0	F-16s	Two missiles fired on IsraelF-16s. Both miss.
06 Mar 99	PKK	Unknown	20/0	Puma helicopter	Helicopter shot down in southern Turkey.
02 Jan 99	UNITA	Unknown	14/0	C-130	UN plane shot down in central Angola.
26 Dec 98	UNITA	Unknown	9/0	C-130	UN-chartered plane shot down in central Angola.
15 Dec 98	UNITA	Unknown	10/0	An-12	An-12 struck by missile en route to Luanda.
10 Oct 98	Tutsi rebels	Possible SA-7	40/0	Boeing 727	Airplane struck over DR of Congo.
13 Aug 98	LTTE	Unknown	0/0	Kfir fighter and surveillance aircraft	Missiles fired by rebels. No damage.
01 Dec 97	KLA	Strela 2M	5/0	Yugoslav Air Transport	Serb reports KLA shot down craft near Pristina.
07 Oct 97	LTTE	Unknown	0/0	Mi-17 transports	Missiles reportedly fired from Tamil rebel boats.
10 Nov 97	LTTE	Unknown	2/2	Mi-17 transports and Mi-24'Hind'	Missiles fired at helicopter convoy.
20 Aug 97	LTTE	Stinger (reported)	0/0	Kfir fighters	Miss over Puliyankulam.
18 May 97	PKK	SA-7	2/0	Super Cobra	Shot down during operations in Iraq.
May 97	PKK	SA-7	11/0	Cougar transport	Shot down during operations in Iraq.
22 Jan 96	LTTE	Unknown	39/0	Mi-17	Unconfirmed MANPADS.
30 Apr 96	LTTE	Unknown	94/0	Unknown	Two air force transports downed.
Apr 96	Hizbullah	Unknown	0/0	UAV	Unconfirmed MANPADS.

D. SOURCES OF MANPADS

1. Soviet Arms Surplus

The Soviet Union was one of the world's major exporters of conventional weapons until the early 1990's. "Russia and the other former Soviet Republics created a different kind of culture and economy, and by the early 1990's at least seventy cities were almost totally dependent for their livelihood on the defense industry" where " the key asset of the Russian defense industries [was] the highly skilled labor force."[60]

The simultaneous collapse of communism and the Soviet empire abruptly fractured its conventional weapons trade. "The USSR, once a monolithic, large-scale supplier of armaments, was fragmented into fifteen independent states, each inheriting a portion of the vast Soviet military-industrial complex."[61] For most of the 1980's, the USSR accounted for roughly 40 percent of the global trade in major conventional weapons.[62] In 1995, Russia accounted for 17 percent of global deliveries compared with 39 percent for the former Soviet Union in 1989.[63]

As part of the transition to post-communist societies in Eastern Europe and the former Soviet Union, many of the large state-owned arms industries were privatized or granted considerable autonomy from central government control.[64] At the same time, these firms lost much of their domestic business and were forced to export arms for hard currency. "As a result of these changes and the desperate need to preserve jobs, these firms [were] under enormous pressure to export as many arms as possible- even if they had to sell to the pariah countries or the black-market traffickers."[65]

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60 Andrei A. Kokoshin, *Soviet Strategic Thought, 1917-91*, Cambridge, MIT, 1998, p. 196.

61 Julian Cooper, "Russia," *Cascade of Arms: Managing Conventional Weapons Proliferation*, edited by Andrew J. Pierre, Cambridge, MA: The World Peace Foundation, 1997, p. 173.

62 Ian Anthony, "The Conventional Arms Trade," *Cascade of Arms: Managing Conventional Weapons Proliferation*, edited by Andrew J. Pierre, Cambridge, MA: The World Peace Foundation, 1997, p. 17.

63 Ibid.

64 Michael Klare, "The Subterranean Arms Trade: Black Market Sales, Covert Operations and Ethnic Warfare," *Cascade of Arms: Managing Conventional Weapons Proliferation*, edited by Andrew J. Pierre, Cambridge, MA: The World Peace Foundation, 1997, p. 59.

65 Ibid.

Russia concurrently found itself with a vast stock of surplus weapons. A reduced military budget, deployable equipment constrained by limitations of the Conventional Forces in Europe (CFE), and the clearly stated intention of Russia's leadership to scale down its armed forces created the surplus.[66]

> At a time when budgetary pressures made it impossible to provide even the most basic housing and social needs of officers and conscripts, especially those returning to Russia from duty in Eastern Europe, the Baltic states and other parts of the former Soviet empire, not surprisingly the country's military leaders have been anxious to raise additional financing by exporting surplus equipment. [67]

Along with the government surplus, after the collapse of the Soviet Union, individual soldiers were able sell weaponry to the highest bidder. "There are credible reports that, after the fall of the Soviet Union, Russian Soldiers simply walked into their armories and took whatever they wanted off the shelves to sell."[68] The Washington, D.C. based Center for Defense Information estimated that although "an accurate number is tough to assess, [sic] there could be tens of thousands of Russian or license-built SA series MANPADS in the hands of so-called 'non-state' or guerilla/terrorist groups." [69]

2. U.S. Stingers

American made Stinger MANPADS are also available on the black market in great numbers. From 1979 to 1988 the U.S. supplied more than 900 Stingers to various groups of anti-Soviet insurgents in Afghanistan.[70] It is well known that the rebels did not retain all of the Stingers left behind after the war. Many found their way onto the global black arms markets and ended up in guerilla arsenals from Sri Lanka to Chechnya.[71]

When Russian troops pulled out of Afghanistan the CIA commenced a $55 million program to buy up the estimated 300 Stingers that were not fired at Russian

66 Cooper, p. 190.

67 Ibid.

68 Phelps, p. 2.

69 Ibid.

70 Ibid.

71 Hunter, p. 2.

aircraft.[72] While the rebels fired many of the missiles against Soviet aircraft, hundreds remained after the fighting ended in 1987. Poor bookkeeping at the CIA combined with the dispersal of Stingers to numerous clans throughout the country made accounting for and recovering them impossible.[73] The result was a proliferation of advanced anti-aircraft weaponry throughout the region. "Some believe that Osama bin Laden himself may be protected by a circle of Al-Queda loyalists armed with Stingers."[74]

The U.S. inability to accurately track Stingers continued in the Persian Gulf War. The Government Accounting Office (GAO) reported that the U.S. military had lost accountability for more than 40 Stingers during Desert Storm.[75] Further review revealed that there were perhaps hundreds of Stingers shipped from the U.S. to foreign nations that have not been tracked by the U.S.[76]

> To prevent the proliferation of the U.S. Stinger missile system, DOD monitors its end use in recipient countries. Although DOD has strengthened the requirements for monitoring Stinger missile systems after they have been sold to foreign countries, DOD has no requirement for DOD organizations for end-use monitoring to keep records on the numbering and destinations of these Stingers. DOD's Stinger records are neither complete nor reliable. As a result, DOD cannot account for each Stinger sold abroad.[77]

72 Lacey, p. 52.

73 Hunter, p 2.

74 Phelps, p. 3.

75 Ibid.

76 Ibid.

77 "Further Improvements Needed in U.S. Efforts to Counter Threats from Man-Portable Air Defense Systems," U.S. General Accounting Office, GAO-04-341R, January 30, 2004, p. 5.

III. COUNTERING THE MANPADS THREAT (INTERNATIONAL AGENCIES)

Three general options are available to counter the complicated MANPADS threat: susceptibility reduction, vulnerability reduction, and non-proliferation. Susceptibility reduction involves measures designed to prevent MANPADS from hitting an aircraft.[78] Vulnerability reduction focuses on improving aircraft survivability in the event of a MANPADS hit.[79] Non-proliferation is comprised of various export control and foreign policy strategies aimed at preventing the acquisition and use of MANPADS by problematic end users such as criminal and terrorist organizations.[80]

> The measures in each category are not mutually exclusive, and none alone will eliminate the threat posed by MANPADS to civilian aircraft. However, a coordinated strategy that incorporates measures from all three categories can reduce the likelihood of a successful attack.[81]

Non-proliferation is the best option to counter the MANPADS threat because it addresses the problem at one of its sources, which are the exporting countries themselves. When paired with another type of MANPADS threat reduction option, export controls are even more critical: "To ensure that protective systems installed on aircraft today are not rendered obsolete by terrorist acquisition of next generation MANPADS tomorrow, the international community must act decisively to improve stockpile security and strengthen export controls in countries that import and manufacture MANPADS."[82]

The next three chapters analyze the ways different entities are countering the MANPADS threat. This chapter discusses the actions of international agencies to mitigate the MANPADS threat. Chapters 4 and 5 address the U.S. and Russian Federation's efforts to counter the MANPADS threat respectively.

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78 "MANPADS Proliferation: Understanding the Problem," Federation of American Scientists website, <www.fas.org/asmp/campaigns/MANPADS>, accessed June 12, 2004, p.3.

79 Ibid.

80 Ibid.

81 Ibid.

82 Ibid.

A. INTERNATIONAL AGENCIES

Many international agencies exist to counter illegal MANPADS proliferation. The addition of MANPADS to the UN Registry of Conventional Arms will be addressed first, followed by the Wassenaar Arrangement, G-8 Action Plan, APEC and OSCE. This chapter concludes with critiques of the existing counter-proliferation entities and recommendations for their improvement.

1. United Nations Register of Conventional Arms

The most crucial implementation of recent MANPADS legislation was a 2003 resolution adding MANPADS to Category 7 of the United Nations Register of Conventional Arms. This action was paramount because it identified MANPADS separately under the category of missiles and missile launchers.[83] The United Nations Register of Conventional Arms is a voluntary arrangement established on January 1, 1992 and titled "Transparency in Armaments."[84] It "calls upon all member states to provide annually by May 31 of each year, to the Secretary-General, relevant data on imports and exports of conventional arms to be included in the Register."[85]

UN member states are also invited to report on their military holdings and procurement through national production and relevant policies. In the same resolution, the General Assembly declared its determination to prevent the excessive accumulation of arms in order to promote stability and strengthen international peace and security.[86] The resolution also takes into account the legitimate security needs of states and the principle of undiminished security at the lowest possible level of armaments.[87]

The register is an annual compilation of national reports on imports and exports but is not one hundred percent reliable since submissions are voluntary and not all

83 "United Nations Register of Conventional Arms Fact Sheet," U.S. Department of State website, www.state.gov/t/ac/rls/fs, accessed June 12, 2004, p. 2.

84 "General and Complete Disarmament: Transparency in Armaments," UN RES/46/36L, 65th Plenary Meeting, 6 December 1991, <http://disarmament.un.org:8080/cab/ares46361.html>, accessed February 13, 2005, p. 1.

85 Ibid.

86 Ibid.

87 Ibid.

countries submit reports.[88] Ultimately, the register is a confidence-building measure rather than an arms control measure since it does not involve curbing exports or destroying stocks of weapons. However, if a country reports a surge in imports an offensive buildup or particular weapon use could be imminent.[89]

This approach has promise but it relies on the member state to report its imports, exports, and holdings. MANPADS' reports submitted to the UN for the year 2003 reveal that only Hungary, the Netherlands, Greece, and Sweden provided any MANPADS data.[90] Furthermore, the data submitted by these four countries was incomplete, as it did not include imports, exports, and holdings of MANPADS.[91] This evidence supports critiques of the UN Register of Conventional Arms.

> The evaluation of the Register shows that it has failed to make significant progress toward its goal of serving as a mechanism in which data would be generated and utilized by states to address excessive and destabilizing arms buildups, i.e., provide a management tool to prevent them. The need for the international community to manage the negative effects of the arms trade remains.[92]

Another problem with the UN Register of Conventional Arms is that is dependent upon the concept of transparency. Although intended to a positive arms control mechanism, transparency can have negative effects on arms control when a state considers its overall security.

> To summarize the issue of transparency, it can be said that many state's are reluctant to participate fully because they believe that transparency runs counter to the most effective ways of defending their countries, secrecy. For those states, the risks of transparency outweigh the potential benefits, that is, the building of trust and confidence that will lead to

88 Jim Wurst, "U.N. Committee Approves Expansion of Arms Register," *U.N. Wire*, http://groupstone.net/Scripts/Webobjects-3.d11,accessed November 14, 2004.

89 Ibid.

90 "United Nations Register of Conventional Arms, 2003 submissions, MANPADS," <http://disarmament2.un.org/UN_Reg.nsf>, accessed February 14, 2005.

91 Ibid.

92 Edward J. Laurance, Hendrik Wagenmakers, and Herbert Wulf, "Managing the Global Problems Created by the Conventional Arms Trade: An Assessment of the United Nations Register of Conventional Arms," *Global Governance*, Volume 2, Spring 2005.

> lowering the potential for armed conflict. It appears that transparency is accepted only if security is granted. [93]

2. The Wassenaar Arrangement

The key entity for MANPADS non-proliferation is the Wassenaar Arrangement or WA. The thirty-three members of the Wassenaar Arrangement have agreed to implement policies and controls to stop the illegal transfer of MANPADS to suspect end users.[94]

> The agreement discourages MANPADS transfers to end-users other than states, and to governments that are unwilling or unable to protect against theft, loss, misuse, or diversion of the MANPADS themselves or related technical information. It also identifies several safeguards that importing elements should implement, including storing the firing mechanism and the missile in separate locations, taking monthly inventories of imported MANPADS, and re-exporting imported systems only after receiving prior consent from the exporting government.[95]

The Wassenaar Arrangement is open on a global and non-discriminatory basis to prospective adherents that comply with the agreed criteria. In order to be admitted to the arrangement, a state must be a producer or exporter of arms or industrial equipment.[96] The state must also maintain non-proliferation policies and appropriate national policies, maintain fully effective export controls and dual-use goods and technologies, and adhere to relevant non-proliferation treaties and regimes.[97]

The primary focus of the Wassenaar Arrangement's efforts to reduce illegal proliferation of MANPADS is on the export control of MANPADS. "Elements for Export Controls of MANPADS" is endorsed by all of the Wassenaar Arrangement's participants and provides set criteria for evaluating potential MANPADS exports. (The

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93 Edward J. Laurance, Hendrik Wagenmakers, and Herbert Wulf, "Managing the Global Problems Created by the Conventional Arms Trade: An Assessment of the United Nations Register of Conventional Arms," *Global Governance*, Volume 2, Spring 2005.

94 The following nations are participants in the Wassenaar Arrangement: Argentina, Austria, Australia, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Republic of Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States.

95 "MANPADS Proliferation: Understanding the Problem," Federation of American Scientists website, www.fas.org/asmp/campaigns/MANPADS, accessed June 12, 2004, p. 4.

96 "The Wassenaar Arrangement," www.wassenaar.org, accessed June 12, 2004.

97 Ibid.

entire document is an appendix to this thesis.) The WA countries maintain effective export controls for the items on agreed lists which are reviewed periodically to take into account technological developments and lessons learned.[98] Suppliers of arms and dual-use items (items with both a civilian and military use capability) develop common understandings of the risks associated with their transfer and assess the scope for coordinating national control policies to combat these risks.[99]

The Arrangement's specific information exchange requirements include semi-annual notifications of arms transfers covering the seven categories derived from the UN Register of Conventional Arms. [100] Members are also required to report transfers or denials of transfers of certain controlled dual-use items. Denial reporting helps to bring the attention of members to the transfers that may undermine the objectives of the Arrangement.[101]

Prior to authorizing MANPADS exports, the exporting government assures itself of the recipient government's guarantees not to re-export MANPADS except with the prior consent of the original exporting government.[102] This concept enhances the tracking of the MANPADS transfers, a core problem previously identified. The recipient government must provide requisite security to classified material and information in accordance with applicable bilateral agreements, prevent unauthorized access or compromise, and "inform promptly the exporting government of any instance of compromise, unauthorized use, loss of theft of any MANPADS material."[103]

> Decisions to authorize MANPADS exports will take into account potential for diversion or misuse in the recipient country, the recipient government's ability and willingness to protect against unauthorized re-transfers, loss, theft, and diversion, and the adequacy and effectiveness of

98 "Elements for Export Controls of MANPADS," Wassenaar Arrangement website,<www.wa.org>, accessed June 15, 2004, p.2.

99 Ibid.

100 Ibid.

101 Ibid.

102 Ibid.

103 Ibid.

the physical security arrangements of the recipient government for the protection of military property, facilities, holdings, and inventories.[104]

3. The G-8 Action Plan

The G-8 Action Plan for MANPADS counter-proliferation resulted from a June 2003 meeting in Evian, France where the Group of Eight major industrialized democracies endorsed the WA's "Elements for export controls of MANPADS" and agreed to take several additional steps. Canada, Germany, France, Italy, Japan, Russia, the United Kingdom, and the United States committed to exploring the feasibility of preventing unauthorized use of these weapons through the development of launch control features and other design changes.[105] The group also pledged to help other countries to "collect, secure and destroy surplus units, and to exchange information on uncooperative countries and entities."[106]

The Group of Eight also vouched to implement the following measures to prevent MANPADS from falling into the hands of terrorists:

- To provide assistance and technical expertise for the collection, secure stockpile management and destruction of MANPADS surplus to national security requirements
- To adopt strict national export controls on MANPADS and their essential components
- To ensure strong national regulation of production, transfer and brokering of MANPADS
- To ban transfers of MANPADS to non-state end-users; MANPADS should only be exported to foreign governments or to agents authorized by a government
- To exchange information on uncooperative countries and agencies
- To examine the feasibility of development for new MANPADS of specific technical performance or launch control features that preclude their unauthorized use

104 "Elements for Export Controls of MANPADS," Wassenaar Arrangement website,<www.wa.org>, accessed June 15, 2004, p.2.

105 "G-8 to Take Further Steps to Enhance Transportation Security," U.S. Department of State, June 2, 2003, <http://usinfo.state.gov/topical/pol/terror/texts>, accessed June 12, 2004.

106 Ibid.

- To encourage action in the International Civil Aviation Organization (ICAO) aviation Security (AVSEC) Working Group on MANPADS[107]

4. APEC (Asia-Pacific Economic Cooperation)

Another MANPADS proliferation control entity surfaced at the 2003 APEC Summit. The Asia-Pacific Economic Cooperation (APEC) is the main entity facilitating economic growth, cooperation, trade and investment in the Asia-Pacific region.[108] "It is the only inter-governmental grouping in the world operating on the basis of non-binding commitments, open dialogue and equal respect for the views of all participants. Decisions made within APEC are reached by consensus and commitments are undertaken on a voluntary basis."[109]

APEC's twenty-one member states agreed to strengthen national controls on MANPADS production, exports, and stockpile security. Similar to the G-8 Action Plan, "the declaration also calls on members to ban transfers to sub-national groups, exchange information on national efforts to implement the agreement, and to explore the feasibility of launch control devices."[110]

An APEC counter-terrorism conference has concluded that the dangers posed by MANPADS in the hands of terrorists cannot be eliminated. Strict controls on the export and transfer of these missile systems are deemed essential to reduce the threat they pose to civil aviation. This recommendation was made by The Working Group on Air Transportation Security at the second Secure Trade in the APEC Region (STAR) Conference held in Chile from 5-6 March 2004.[111]

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107 "G-8 to Take Further Steps to Enhance Transportation Security," U.S. Department of State, June 2, 2003, <http://usinfo.state.gov/topical/pol/terror/texts>, accessed June 12, 2004.

108 "About APEC",<www.apec.org>, accessed December 2, 2004. The following countries are members of APEC: Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Hong Kong (China), Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, Philippines, Russia, Singapore, Chinese Taipei, Thailand, United States, and Vietnam.

109 Ibid.

110 "MANPADS Proliferation: Understanding the Problem," Federation of American Scientists website, <www.fas.org/asmp/campaigns/MANPADS>, accessed June 12, 2004, p. 5.

111"Regulation of Surface to Air Missiles for Regional Air Transport Security," APEC website, <www.apec.org/news>, accessed June 18, 2004, p.1.

Specifically, the APEC countries committed to "adopt strict domestic export controls on MANPADS, secure stockpiles, take domestic action to regulate production, transfer, and brokering, ban transfers to non-state end-users, and exchange information in support of these efforts." [112] The working group agreed that business and government coordination was essential to prevent MANPADS proliferation. "The implementation of stringent import and export control policies by member economies was cited as the most effective measure that could be employed at the present time to prevent possible attacks."[113]

5. OSCE (Organization for Security and Cooperation in Europe)

The Forum for Security Cooperation of the OSCE has also addressed the MANPADS Proliferation problem. The Forum for Security Co-operation (FSC) published "Decision No, 3/04" or "OSCE Principles for export controls of MANPADS" which recognizes the threats posed by unauthorized proliferation of and use of MANPADS to civil aviation, peacekeeping, crisis management and anti-terrorist operations.[114] The FSC decision acknowledged the WA's "Elements for Export Controls of MANPADS" and adopted some of its principles.[115]

The OSCE hosted the first international workshop on the threat of shoulder-fired missiles to civil aviation in Vienna on 23 January 2004.[116] The meeting was unprecedented because forty OSCE participating states sent civil aviation and counter-terrorism experts to the event which demonstrated the collective concern and willingness to cooperate in countering the MANPADS threat.[117] The workshop focused on "how the

112 "2003 Leaders Declaration," 21 October 2003, Asia-Pacific Economic Cooperation, <www.apec.org/apec/leaders_declarations/2003>, accessed June 12, 2003.

113 Ibid.

114 "Decision No. 3/04: OSCE Principles for Export Controls of MANPADS," 423rd Plenary Meeting, FSC Journal No. 429, Agenda item 3,OSCE website, <www.osce.org>, accessed June 20, 2004, p.1.

115 Ibid.

116 "OSCE hosts first-ever international workshop on threat of shoulder fired missiles to civil aviation," <www.osce.org/news/generate.pf.php3?news>, accessed November 15, 2004.

117 Ibid.

international community and national governments could improve physical security at airports and counter the threat against civilian aircraft."[118]

B. CRITIQUE OF INTERNATIONAL AGENCIES

The U.N. Register of Conventional Arms, Wassenaar Arrangement, G-8 Summit, APEC, and OSCE each attempt to mitigate the MANPADS threat through various mechanisms but each have their shortcomings. This section critiques international agencies and their attempts to counter the MANPADS threat. Uncertain measures of effectiveness, redundancy, and the export control problem are flaws that are addressed. A revised export control entity is suggested at the end of this section.

1. Uncertain Measures of Effectiveness

The next logical step is an assessment of effectiveness of the controls and policies implemented by international actors to prohibit or reduce the illegal proliferation of MANPADS. The most concrete way to actually track their effectiveness is the obvious statistic of attempted missile attacks on commercial airliners. However, there could be illegal transactions (by definition secret) where the receiving party has taken custody of the weapon and is waiting to use it in a terrorist act at some later point in time. Additionally, it is inherently difficult to know if and why a recipient has not used MANPADS.

As previously addressed in this chapter, the accumulation of a large quantity of arms transfer data provided by a country also cannot be a measure that a controlling entity is effective. A country's voluntary submission of data may not necessarily be the complete truth:

> Reliability of arms transfer data is not enhanced by the overall secrecy surrounding the trade of these sensitive commodities. At the international level, national security demands that each country be very careful regarding the release of arms transfer data. Because these commodities can have a major political impact, governments go to great lengths to conceal and distort information.[119]

118 "OSCE hosts first-ever international workshop on threat of shoulder fired missiles to civil aviation," <www.osce.org/news/generate.pf.php3?news>, accessed November 15, 2004.

119 Edward J. Laurance, *The International Arms Trade*, Lexington Books, New York, 1992, p. 35.

There is another caution when employing the concept of transparency. Ideally, the concept of transparency where a country would deliberately reveal their MANPADS imports, exports, and holdings without being scrutinized is a beneficial arms control mechanism.[120] However, "in the absence of universally shared, or at least mutually compatible norms, transparency will aggravate conflict. It may simply remove the ambiguity that can otherwise conceal conflicts or soften disagreements."[121]

2. Redundancy

Another critique of international agencies is the inherent redundancy of the different entities working to control MANPADS proliferation. Many of the agencies have implemented the same types of controls with minor variations. The Wassenaar Arrangement appears to be the informal leader of the MANPADS controlling entities with its robust "Elements for Export Controls of MANPADS." The G-8 Action Plan, APEC, and OSCE MANPADS export control efforts borrow heavily from this plan. This redundancy is actually welcomed if a compliant nation is a member of one entity (APEC) and not the other (OSCE).

Any avenue of getting the appropriate MANPADS data from a participating county should be an acceptable one. However, each entity has its own counter-proliferation polices and procedures. Although the variations are slight, important data might not be shared between all of the agencies. Thus, an opportunity to get vital information to the appropriate end-users in order to mitigate the proliferation of MANPADS could be lost. There needs to be a main controlling entity for MANPADS proliferation control.

An argument against the idea of a main MANPADS proliferation control entity is found in the "subsidiarity principle."[122] This principle states that "decisions should always be taken at the lowest possible level or closest to where they will have their effect, for example in a local area rather than nationally.[123] This concept applied to MANPADS

120 Ann Florini, "The End of Secrecy," *Foreign Policy*, Washington: Summer 1998, Issue 111, p. 54.

121 Ibid, p. 58.

122 Edward J. Laurance, interview by author, Monterey, CA., February 8, 2005.

123 "Subsidiarity Principle," <http://www.freesearch.co.uk/dictionary/subsidiarity>, accessed February 13, 2005.

non-proliferation would allow the individual controlling agencies to function on their own with no global watchdog entity.

3. The Export Control Problem

The main focus of existing MANPADS controlling entities is the export control of MANPADS. "Although export controls are important, they are not a panacea [sic]. Export controls must be supported by other nonproliferation measures- confidence building measures, sanctions, incentives, and arms control agreements."[124] Another critical area that needs to be addressed by the international agencies is that of buyer's demand for MANPADS.[125]

While export control is the current focus of existing entities, it is apparent that current export control elements are less than optimal. The Chairman of the House Armed Services Committee (HASC), Representative Duncan Hunter (R-California), vehemently believes that the current export controls of MANPADS are insufficient:

> Unlike during the Cold War, there is inadequate coordination of national export control systems, insufficient information sharing, and a total absence of enforcement mechanisms to ensure that participating states are playing by the rules [sic]. Of course, the dangers of proliferation have not evaporated; they have only changed.[126]

All of the export controls implemented by the major supplier states should be synchronized. There are serious problems here because the existing entities are in need of an overhaul. "The globalized nature of technology trade and the changing nature of the proliferation threat require a new approach."[127]

The initial problem with export control regimes is that their members keep growing. Although this appears to be a positive development, the member countries do not always agree on the nature of the threat. Moreover, all of the entities make decisions

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124 Michael Beck. "Creating a New Multilateral Export Control Regime," Center for International Trade and Security website, <www.pircenter.org>, accessed June 27, 2004, p.1.

125 The reader will note that only exporters are members of the WA.

126 Sharon Weinberger, "Hunter Calls Restrictions on MANPADS 'Insufficient'", *Defense Daily*, June 7, 2004, Volume 222, Issue 47.

127 Beck, p.1.

on the basis of consensus.[128] It is easy to reach a unanimous decision when there are only seven members. However, consensus becomes more difficult when there are over thirty members. This also adds to organizational problems such as finding space large enough to hold a plenary.[129]

Another problem is that some countries are very slow to implement decisions reached within international agencies into national legislation. Other countries may not implement these decisions at all. Because some decisions are implemented on the basis of national-discretion, there are no real consequences for governments that fail to implement agreed upon controls.[130]

Another key problem, which has dogged all efforts to control arms transfers, is that states are reluctant to stop the transfer before the product is exported.[131] Also, no one conventional arms transfer by itself sets off the global arms control alarm.[132]

Finally, the increased pace of global trade and technological innovations have created other problems:

> Controlling exports of emerging dual-use technologies today requires foresight and the ability to juggle competing demands. Officials must keep pace not only with technologies that pose a threat today, but also with technological innovations that might be militarily-relevant tomorrow.[133]

4. A Revised Export Control Entity

A solution to the complex export control problem is to create a new multilateral and centralized export control regime. Michael Beck at the Center of International Trade and Security has proposed a new entity to be the head of other export control entities. The first revision is that plenaries involving all export controlling agencies would be simultaneously held in one place to promote inert-regime dialogue on cross-cutting

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128 Beck, p.2.

129 Ibid, p.1.

130 Ibid.

131 Edward J. Laurance, interview by author, Monterey, CA., February 8, 2005.

132 Ibid.

133 Beck, p.3.

issues."[134] Beck also recommended "co-locating the work of regimes [to] help build a more professional staff and some semi-permanent expertise.[135]

According to Beck, a new formal export control regime would combine existing elements and add the following principles:

1) New democratic decision making procedures to replace consensus, at least on some issues. Weighted voting must also be necessary, with major supplier countries having more of a vote.

2) Require implementation of regime decisions, with few exceptions based on national discretion.

3) A dispute resolution mechanism.

4) A tier list of end users with Tier 1 as the denied parties list, Tier 2 as the sensitive parties list, and Tier 3 as the watch list.

5) Establish and Executive Committee to review proposed transfers to entities on Tier 2, to share information on end-users of concern, and to establish best practices.

6) Create an international team to do outreach.

7) Strengthen information-sharing requirements to include license approvals.

8) Develop new technologies that make it easier to track the movement of sensitive items.[136]

However, this new proposed export control regime is not without its faults. The major obstacle to the revised regime involves those states that do not manufacture or export MANPADS. These states, which are the not members of the Wassenaar Arrangement, have historically felt discriminated by the by export control regimes (supplier clubs). These countries would fight being designated on the "tier list" of end users by arguing that their national security and sovereignty would be violated by this approach.[137]

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134 Beck, p. 3.

135 Ibid.

136 Ibid..

137 Edward J. Laurance, interview by author, Monterey, CA., February 8, 2005.

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IV. COUNTERING THE MANPADS THREAT (U.S. EFFORTS)

The United States has taken various domestic measures to mitigate the MANPADS threat. The United States passed The MANPADS Defense Act which focuses on non-proliferation and foreign policy to counter the MANPADS threat. The Department of Homeland Security also focuses on non-proliferation policies, but places more emphasis on countermeasures to mitigate the MANPADS threat.

A. U.S. DOMESTIC EFFORTS

1. The MANPADS Defense Act (HR 4056)

U.S. awareness of the MANPADS threat culminated with the passing of the Commercial Aviation MANPADS Defense Act of 2004. This bill was presented to the House of Representatives on March 30, 2004 to "encourage the establishment of both long-term and short-term programs to address the threat of MANPADS to commercial aviation."[138] "The full House of Representatives on July 23 in a 423-0 vote passed H.R. 4056, which includes 'interim' measures to counter the threat of shoulder-fired missile attacks on commercial aircraft. The bill also supports further work in ground-based defenses against MANPADS."[139] The entire MANPADS Defense Act (HR 4056) is included as an appendix to this thesis.

Congress found that MANPADS constitute a threat to military and civilian aircraft and this threat requires the development of short term and long term plans as well as an international and domestic response.[140] The bill calls for U.S. participation in an international effort to address the issue of MANPADS proliferation and directs the U.S. government to pursue diplomatic efforts to prevent the proliferation of MANPADS.[141]

The section titled "International Cooperative Efforts" directs the President to limit the availability and transfer of MANPADS and achieve destruction of MANPADS where

138 "Commercial Aviation MANPADS Defense Act of 2004 (H.R. 4056)," Federation of American Scientists website, <www.fas.org/asmp/resourcesd/govern/108th/HR4056>, accessed June 29, 2004, p.1.

139 "Shoulder Fired Missiles Countered By Interim Proposal," *Airports*, Vol. 21, Issue 31, New York, p. 3.

140 "Commercial Aviation MANPADS Defense Act of 2004 (H.R. 4056)," Federation of American Scientists website, <www.fas.org/asmp/resourcesd/govern/108th/HR4056>, accessed June 29, 2004, p.1.

141 Ibid, p.1-2.

possible by using "diplomatic and cooperative efforts including bilateral and multilateral treaties.[142] The President must transmit to the appropriate congressional committees a report that contains a detailed description of the status of diplomatic efforts (to counter the MANPADS threat) six months after the bill's effective date and annually thereafter until completion of such diplomatic efforts.[143]

The MANPADS bill also tasked the Federal Aviation Administration (FAA) to conduct airworthiness certifications of missile defense systems that could be installed on commercial jets by early 2006.[144] As part of the process, the FAA is required to accept the Department of Homeland Security certification that "a missile defense system is effective and functional to expedite the airworthiness of the certification process."[145]

2. The Department of Homeland Security

The Bush administration set up a special panel to assess the vulnerability of commercial airliners and Congress has asked the Department of Homeland Security to address the MANPADS problem and figure out how to best protect commercial aircraft.[146] The U.S. Department of Homeland Security is taking an aggressive approach to counter the threat of shoulder-fired missiles to civilian commercial aviation. The Department of Homeland Security's Science and Technology Division is leading the technological aspect of the effort through its Counter-MANPADS Special Program Office. This office determines the viability, economic costs, and effectiveness of adapting existing countermeasures technology from military to commercial aviation use.[147] The Department of Homeland Security will provide the Administration and

142 "Commercial Aviation MANPADS Defense Act of 2004 (H.R. 4056)," Federation of American Scientists website, <www.fas.org/asmp/resourcesd/govern/108th/HR4056>, accessed June 29, 2004, p.1.

143 Ibid, p. 2.

144 Ibid, p.1.

145 "House Committee Approves Aviation Security Bill," *Defense Daily*, Potomac: October 4, 2004, Vol. 223, Issue 66, October 4, p.1.

146 Erwin, p.28.

147 "Fact Sheet: Countering Missile Threats to Commercial Aircraft," U.S. Department of Homeland Security website, <www.dhs.gov/dhspublic/display>, accessed June 13, 2004.

Congress with the most feasible solution to defend against shoulder-fired missiles following an aggressive 18-24 month analysis.[148]

The Homeland Security Council and the National Security Council convened an interagency task force in December 2002 with twenty-one U.S. government agencies represented.[149] These agencies included the departments of Defense, Treasury, and Homeland Security as well as the Federal Aviation Administration and Federal Bureau of Investigation. [150] These agencies were tasked to develop an aggressive plan to assess and counter the MANPADS threat. "The task force adopted a systematic, end-to-end countermeasures strategy, which is being aggressively implemented through multiple agency initiatives. The strategy focuses on proliferation control and threat reduction, tactical measures and recovery and technical countermeasures."[151]

Countermeasures have become a focal point of the Department of Homeland Security's Counter-MANPADS Program.[152] There are a variety of countermeasure systems designed to detect and foil MANPADS attacks. These include infrared decoy flares, Direct Infrared Countermeasures (DIRCMS), and Large-Aircraft Infrared Countermeasures (LAIRCM).[153]

Infrared decoy flares confuse the infrared seekers of earlier MANPADS models by dispensing materials that give off an IR signature that is similar to or more intense than the signature of the aircraft itself. These systems are less effective against newer models of MANPADS, which are better able to differentiate between flares and the aircraft.[154]

Direct Infrared Countermeasures (DIRCMs) direct infrared energy at the missile's seeker causing it to veer off course and away from targeted aircraft. The beam of energy

148 "Fact Sheet: Countering Missile Threats to Commercial Aircraft," U.S. Department of Homeland Security website, <www.dhs.gov/dhspublic/display>, accessed June 13, 2004.

149 Ibid.

150 Ibid.

151 Ibid.

152 Ibid.

153 Chankin-Gould, p.3.

154 Ibid.

generates a target signal that is stronger than the signal of the targeted aircraft and fools the guidance system into thinking the missile is off course.[155] The guidance system responds by adjusting the missile's flight path while the DIRCM continues to direct the infrared beam at the missile until it is off course and way from the aircraft.[156]

Large-Aircraft Infrared Countermeasure (LAIRCM) is a new countermeasure similar to DIRCM. LAIRCM uses an infrared laser instead of a lamp system to jam the incoming missile.[157] The laser is more effective than lamp-based systems because it can be used in different frequencies against older and newer missiles.[158] The LAIRCM system weighs 350 pounds and can be installed in less than a week.[159] The price for each system is $2 million each for an order of 300 aircraft.[160] However, LAIRCM technology requires FAA approval before it can be installed on any civilian airliner and the certification process could take at least nine months.[161]

The Department of Homeland Security has mandated a disciplined systems-engineering approach to identify, test, evaluate, integrate and support countermeasures for commercial aircraft.[162] "The essence of the program is to collect information from industry, select the best contractor(s) to perform systems analysis and flight tests, and to devise a plan that will permit modifications of commercial aircraft with the least disruption and out-of-service costs to the airline industry."[163]

BAE and Northrop Grumman were selected by the Department of Homeland Security in August 2004 to enter the 18-month second phase of the Counter-MANPADS Program and each received $45 million to develop, prototype and test their

155 Chankin-Gould, p. 4.

156 Ibid.

157 Erwin, p.28.

158 Ibid.

159 Ibid.

160 Ibid.

161 Ibid.

162 Calvin Biesecker, "Counter-MANPADS Challenge is Making the Commercial Fit, Firms Say," *Defense Daily*, Potomac: August 27, 2004, Vol. 223, Issue 41, p. 1.

163 Ibid.

technologies.[164] Both firms proposed military developed directed energy solutions. Northrop Grumman developed and is delivered its LAIRCM system currently used in Air Force transports (C-17 and C-130) while BAE developed and delivered its system currently used by the U.S. Army.[165]

The contractors will be gearing up for a critical design review of their respective systems commencing phase two. They will both build prototypes that will be integrated onto commercial wide body planes for testing in late summer 2005 with the phase ending in January 2006.[166] "At that point, the Department of Homeland Security expects to have enough information on the systems to allow decision makers to decide on the next step, which ultimately could be deployment on commercial aircraft."[167]

B. U.S. FOREIGN POLICY

One of the biggest foreign policy challenges facing the U.S. has been to get China onboard in working to stop the illegal transfer of MANPADS. However, the west has an enormous leverage with China because of trade. China is also deeply concerned that technology transfer restrictions will remain in place and even be tightened.[168]

China presents a problem with respect to arms control regulation and oversight. China's arms industry is a complex network of nationalized corporations that are linked to the People's Liberation Army or (PLA).[169] The modernization of the Chinese military is dependent to some extent upon the revenues that can be achieved through arms exports.[170] This is a key economic motivation for an aggressive export policy.

At the same time, the dominant influence over these corporations has been retained in the hands of the leadership of China's Communist Party.[171] It is widely

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164 Biesecker, p.1

165 Ibid.

166 Ibid.

167 Ibid.

168 Ibid.

169 Andrew J. Pierre, "Toward an International Regime for Conventional Arms Sales," *Cascade of Arms: Managing Conventional Weapons Proliferation*, edited by Andrew J. Pierre, Cambridge, MA: The World Peace Foundation, 1997, p. 396.

170 Ibid.

171 Ibid.

believed that the families of these leaders, especially the Red Princes and Princesses, as the more entrepreneurial sons and daughters of the aging leaders are called, use arms exports as a way to acquire vast personal fortunes. This income is said to be another compelling incentive for weapons exports.[172]

However, China's perception of the world and itself is radically changing. Zbigniew Brzezinski addresses this issue in *The Choice*:

> The Chinese view of the world- and of China's own role in it-has become increasing pragmatic and non-doctrinal, especially after 9/11. Evidently concerned that they were risking international isolation, given Russia's apparent decision to give up its flirtation with a Russo-Chinese coalition against American "hegemonism," the Chinese abandoned their frenetic denunciations of American aggressiveness as well as their drumbeat allegations that the United States was planning war against the People's Republic of China.[173]

The need for wider international cooperation to cope with local instability has gained urgency in China since Russia has withdrawn from the zone of Central Asia. Thus, there is an opening for the U.S. to build and reinforce a foreign security policy with China by using Japan as the middleman. Japan has been encouraged to identify its future with Asia and "progress China-US-Japan relationships."[174] Both Japan and China should be pressed to become material participants in promoting the region's political and social stabilization.[175]

"How the power dynamics in the Far East are shaped by the inter-relationships among America, Japan, and China will also affect global stability. The United States should seek to translate the emerging equilibrium among itself, Japan, and China into a more structured security relationship."[176] This security relationship could conveniently have MANPADS export control and non-proliferation as one of its cornerstones.

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172 Pierre, p. 396.

173 Zbigniew Brzezinski, *The Choice: Global Domination or Global Leadership*, New York: Basic Books, 2004, p.111.

174 Ibid, p. 115.

175 Ibid, p. 226.

176 Ibid, p. 226.

Although China is a member of APEC (previously discussed as an agency working to mitigate MANPADS proliferation), an analysis of APEC's charter reveals that the People's Republic of China is more focused on participating in APEC's economic issues than its security ones.[177] Still, the U.S. has continued to work with other countries of Asia and the Pacific Rim in countering MANPADS proliferation.[178]

As previously cited in this thesis, the United States reached an agreement in October 2003 with governments across Asia and the Pacific Rim to sharply restrict the use and transfer of shoulder-fired missiles that could be used by Al-Queda and other terrorist groups to shoot down passenger planes.[179] The proposal offered by the United States called for "strong national regulations on the production, transfer and brokering of these systems" and for "joint research on the feasibility of a new generation of lightweight missiles with launch control features that preclude their unauthorized use."[180]

Additionally, the government in Bangkok called for all Asian and Pacific Rim nations to adopt formal controls over their inventories of small surface-to-air missiles and to ban any transfer of the weapons to non-state end-users.[181]

C. CRITIQUE OF U.S. EFFORTS

The MANPADS Defense Act is a valid attempt to mitigate the MANPADS threat to commercial airliners because international non-proliferation and counter-proliferation efforts are its focal point. However, the Department of Homeland Security's attempts to arm civilian airliners with missile countermeasure systems are questionable because of its feasibility and its high costs.

Criticism is mounting that the U.S. is spending too much time and money on attempting to install military countermeasures onboard commercial airliners. "A Series of Public Policy Briefings on Protecting Commercial Aircraft from Terrorist Attack" was

177 "APEC 2003 Senior Official's Meetings, <http://www.apec.org/apec/documents_reports/senior_officials_meetings/2003.html>, accessed February 14, 2005.

178 Philip Shennon, "U.S. Reaches Deal to Limit transfers of Portable Missiles," *New York Times*, October 21, 2003, p. A1.

179 Ibid.

180 Ibid.

181 Ibid.

the topic for the second in a series of Electronic Warfare (EW) Focus Days hosted by the Association of Old Crows (AOC) on Capitol Hill on 22 June 2004.[182] An airline-industry panel argued that there are a number of other aviation-safety issues that deserve greater attention than missile countermeasures for civilian aircraft. The panel stated that the costs of purchasing, installing, maintaining, and operating any of the current countermeasure proposals would be almost impossible for the financially burdened airline industry to bear. [183] At a cost of $2 million each for an order of 300 aircraft, the countermeasure system is an expensive deterrent[184]

A RAND report published in February 2005 titled "Protecting Commercial Aviation Against the Shoulder-Fired Missile Threat" also opposed current U.S. efforts to install countermeasures on commercial airliners before conducting further research:

> Given the significant costs involved with operating countermeasures based on current technology, we [RAND] believe a decision to install such systems aboard commercial airliners should be postponed until the technologies can be developed and shown to be more compatible in a commercial environment…Concurrently, a development effort should begin immediately that focuses on understanding damage mechanisms and the likelihood of catastrophic damage to airliners from MANPADS and other forms of man-portable weapons. Findings from the two development programs should inform a decision on the number of aircraft that should be equipped with countermeasures (from none to all 6,800 U.S jet-powered airliners) and the sequence in which aircraft are to be protected.[185]

Determining a sequence in which aircraft are to be outfitted (assuming the countermeasure system installation and operation were validated) brings up a dilemma on an international scale. How would the U.S. be able to rapidly provide the commercial countermeasures technology to its allies? The current plan calls for adopting existing technologies from military to commercial aviation use. Since the U.S. has advanced military technology compared to most of its allies, it will be easier for the U.S. to adapt

182 "MANPADS Focus Day held on Capitol Hill," *Journal of Electronic Defense*, Norwood, August 2004, Volume 27, Issue 8, p. 19.

183 Ibid.

184 Erwin, p. 28.

185 "RAND Report: Protecting Commercial Aviation Against the Shoulder -Fired Missile Threat," <http://www.rand.org/pubs/occasional_papers/2005/RAND_OP106.pdf>, accessed February 14, 2005, p. 31.

and install the countermeasures technology on its domestic aircraft. The U.S. must balance this situation by devoting adequate time and resources to assess its position on global MANPADS proliferation controls where the benefits of success are equally enjoyed by all parties. A sinister scenario with catastrophic ramifications for U.S. foreign policy approval ratings would be a successful MANPADS attack on a commercial aircraft of a U.S. ally that was not protected by a countermeasure system.

Although comprehensive, the RAND report does not take into consideration the reaction of the American flying public to the installation of missile countermeasure systems onboard commercial airliners. The RAND report does state "based on the effects of the attacks of September 11, we find it plausible that demand for air travel could fall by 15-25 percent for months after a successful MANPADS attack on a commercial airliner in the United States."[186] What is the projected decline in the number of passengers electing not to fly due to the American public's perception of an imminent MANPADS attack since countermeasures have been installed on commercial airliners? The first group of air travelers to find an alternate means of transportation could be weekend vacationers. All speculation aside, the psychological and sociological impact of installing missile countermeasures on commercial aircraft and its effect on the number of air travelers warrants additional research.

Even though non-proliferation and not countermeasure installation is the best option to mitigate the MANPADS threat, the U.S. needs to fix its own MANPADS export control problems before becoming the global leader in export control issues. As previously addressed in Chapter 2, The House Armed Services Committee (HASC) released a report in June 2004 on MANPADS export controls by the U.S. General Accounting Office.[187] "The GAO report, commissioned by [HASC chairman] Duncan Hunter (R-CA), found that the Pentagon did not have adequate records on Stinger missiles that have been sold abroad. Additionally, the Pentagon was not checking adequately to ensure that Stingers exported abroad are in the correct hands."[188]

186 "RAND Report: Protecting Commercial Aviation Against the Shoulder -Fired Missile Threat," <http://www.rand.org/pubs/occasional_papers/2005/RAND_OP106.pdf>, accessed February 14, 2005, p. 9

187 "Further Improvements Needed in U.S. Efforts to Counter Threats from Man-Portable Air Defense Systems," U.S. General Accounting Office, GAO-04-341R, January 30, 2004.

188 Weinberger, p 2.

The GAO report recommended that the State Department work within the multilateral export control regimes such as the Wassenaar Arrangement to improve international controls over MANPADS.[189] Additionally, the GAO states that U.S. Defense Department needs to standardize and consolidate record keeping with respect to Stinger exports and track the worldwide inventory of its missiles.[190]

In *Soft Power*, Joseph Nye, Jr. warns of problems that can occur for the U.S. when acting on issues in the international community when the same issues are not in order at home:

> Problems arise for our soft power when we do not live up to our own standards. As we struggle to find the right balance between freedom and security in the fight against terrorism, it is important to remember that others are watching as well.[191]

Finally, regarding U.S. foreign policy toward China, "China can be pressed to take arms control more seriously, but doing so will be as complex as it was to engage the Soviet Union during the Cold War." [192] However, the U.S. must apply a lesson learned from the failed Conventional Arms Transfer Talks (CATT) with the Soviet Union during the Cold War. These bilateral talks between the U.S. and Soviet Union ultimately failed because European countries were not participants.[193] "When the talks between the United States and Soviet Union ran into difficulties, the political ballast the Europeans might have provided was missing…All [of] the major players must be present if multilateral arms restrain is to succeed."[194] Thus, U.S. talks with China to mitigate the MANPADS threat must be multi-lateral and involve all major arms (MANPADS) exporting countries.

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189 "Further Improvements Needed in U.S. Efforts to Counter Threats from Man-Portable Air Defense Systems," U.S. General Accounting Office, GAO-04-341R, 30 January 2004, p. 7.

190 Ibid., p.8.

191 Joseph S. Nye, Jr., *Soft Power: The Means to Success in World Politics*. New York: Public Affairs, 2004, p.143.

192 Gerald Segal, "China," *Cascade of Arms: Managing Conventional Weapons Proliferation*, edited by Andrew J. Pierre, Cambridge, MA: The World Peace Foundation, 1997, p. 220.

193 Pierre, p.375.

194 Ibid.

V. COUNTERING THE MANPADS THREAT (THE RUSSIAN FEDERATION'S EFFORTS)

The government of the Russian Federation is extremely concerned about the illegal proliferation of MANPADS. In June of 2003, illicit MANPADS proliferation was highlighted at an emergency security session which included representatives from the Commonwealth of Independent States. Russia's Defense Minister Sergei Ivanov warned that an international watchdog agency was needed to be created to monitor the proliferation of shoulder-launched missiles "not only because the threat of such weapons falling into the hands of terrorists is real but because it is already happening."[195]

Illegal MANPADS proliferation to Chechen rebels is one factor that has led to the Russian Federation's alignment with Western counter-proliferation policies. The Russian army is not facing the same high number of shoulder-launched missiles that the Soviet army saw in Afghanistan but increased proliferation of MANPADS to Chechen rebels has increased the danger to close air support (CAS) aircraft operating in theater.[196] A number of aircraft have been shot down, including SU-25 'Frogfoot' and SU-24 'Fencer' fighter-bombers. MANPADS have also shot down a number of military helicopters.[197]

The sources of MANPADS used by Chechen rebels are varied. A large number seized by Russian authorities indicated that the rebels established an effective pipeline for delivery. Three SA-7 missiles were found in the territory of Ingushetia near the Russian-Georgian border in September 2000.[198] One month later, an unspecified number of SA-7's were discovered in a building near Severy Airport.[199] The following month a Russian military operation resulted in the seizure of four SA-7 missiles with their launchers from

195 Samson, p.2.

196 Hunter, p.2.

197 Ibid.

198 Ibid.

199 Ibid.

a lorry in Dagestan. [200] A rebel spokesman later announced that the weapons were part of a shipment of arms destined for use in Chechnya.[201]

The Russian Federation is a key entity in MANPADS counter-proliferation because it is both a former producer and a country working to stop the illicit sale of shoulder-fired weapons. This chapter discusses export controls in the Russian Federation, the CIS and MANPADS counter-proliferation, the Russian Federation's Western aligned counter-proliferation policy, and the U.S. and Russian Federation's joint sting operation.

A. EXPORT CONTROL

In November 2002, the Russian Federation revealed that "tens of thousands" of its shoulder-launched missiles may have been stolen from its arsenal during the 1990's.[202] A lack of Soviet records of MANPADS transfers further complicates the problem of tracking MANPADS exports. "Arms sales prior to the Gorbachev period [were shrouded] in extraordinary secrecy surrounding all aspects of the business. No statistics were published on the sale of the trade, and Soviet export arms policy could not be discussed in the press. Probably only a handful of top party, military and government leaders knew the details."[203]

The absence of effective export controls and customs services at the borders of Russia and its new neighbors facilitated unofficial arms trading. Revised export controls were implemented in 1992 and over time it has become more difficult to export arms illegally.[204] The Russian Foreign Intelligence Service has created an export controls directorate to guard against the proliferation of sensitive military technologies such as nuclear, biological, chemical, and missile systems.[205]

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200 Hunter, p.2.

201 Ibid.

202 Ibid.

203 Julian Cooper, "Russia," in *Cascade of Arms: Managing Conventional Weapons Proliferation*, edited by Andrew J. Pierre, Cambridge, MA: The World Peace Foundation, 1997, p. 175.

204 Ibid, p. 191.

205 Ibid.

However, problems in establishing export controls in the newly created Russian Federation hampered the arms industry's legal arms trades:

> [Leaders] in the presidential apparatus, bureaucracy, armed forces, and industry have backed an active arms export policy in the expectation of earning enough hard currency to help alleviate the acute transition problems of the hypertrophied military- industrial complex. [However] the strong official backing for arms exports, coupled with the partial decentralization of authority to negotiate deals, raised expectations in industry and the armed forces that more sales would soon be achieved. These hopes [were] frustrated.[206]

The limited success in expanding arms sales provoked a search for scapegoats. Many in Russia's industrial and governmental circles believed the United States was responsible by attempting to block Russia access to both old and new markets.[207] However, the real culprit was the Ministry of Foreign Economic Relations or MFER. Its critics argued that it was too restrictive and not efficiently enterprising in its approach to arms sales as "it attempts to maintain relatively high prices and appears reluctant to allow producers to retain export earnings."[208]

Ultimately, the Western apprehensions of uncontrolled flooding in the form of legal Russian arms exports were not realized. "A combination of the inertia of former Soviet institutions and an awareness of the potential economic and political costs of provoking serious Western concern and the inability of Russia and other states to respond readily to the new competitive market conditions has limited their ability to sell in new markets to compensate for the dramatic loss of traditional clients."[209] However, increased black market sales of MANPADS and other arms to the highest bidder from the former Soviet successor states are a brutal reality. This has prompted the Russian government to adopt appropriate legislation to control sales of conventional arms and exports of nuclear, missile and dual-use technologies.[210]

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206 Cooper, p. 196.

207 Ibid, p. 192-193.

208 Ibid, p. 193.

209 Ibid, p.196.

210 Ibid, p.197.

Russia's efforts to develop controls on strategic trade were motivated by a large part by a belief that implementation of such a system was necessary for gaining access to Western technology and markets. This belief was based upon the message conveyed by Western officials in numerous meetings: "No export control, no high technology trade."[211]

> The Russian case suggests that export control systems will be more effective if states can be convinced that it is in *their* security interests, and not just economic interests, to develop export controls, and if a consensus can be reached among members of export control arrangements on what states or end-users should be the targets of export control.[212]

In 2002, the U.S. and Russian Federation agreed to a new strategic framework that covered the issues of strategic offensive and defensive systems, nonproliferation and counter-proliferation.[213] Within the last several years, Russia has adopted comprehensive export control legislation, incorporating advice from U.S. experts as well as criminal and civil penalties for export control violations. [214] Moreover, Russia agreed to terms of MANPADS counter-proliferation export controls outlined at the December 2003 Wassenaar Arrangement conference.

The Russian Federation is attempting to streamline international information exchanges in the course of joint G-8 anti-terrorist efforts. A border control exercise in the fall of 2002 highlighted successful cooperation between the secret services of G-8 countries.[215] This exercise aimed to expose persons crossing the borders of G-8

211 Michael Beck, "Russia's Rational for Developing Export Controls," *Arms on the Market: Reducing the Risk of Proliferation in the Former Soviet Union*, edited by Gary K. Bertsch and Suzette R. Grillot. New York: Routledge, 1998, p. 48.

212 Ibid, p. 50.

213 "Text of U.S.-Russia Treaty on Nuclear Arms Reductions," Briefing Book on the Bush-Putin Summit and the U.S. Nuclear Posture Review," Center for Arms Control and Nonproliferation, May, 2002, <http://www.armscontrolcenter.org/resources/20020501_bb_bush-putin_summit.pdf>, accessed February 14, 2005.

214 "Ukraine Ready to Discuss Russia's Proposals on Tightening MANPADS Sales," Pravda, 30 JUL 2003, <www.pravda.com>, accessed September 16, 2004.

215 "G8 Countries Need Russia's Anti-terrorist Experience," Pravda, 20 FEB 2004, <www.pravda.com>, accessed September 16, 2004.

countries borders with fake passports and showed the Russian frontier service operating with some effectiveness.[216]

Russia also abides by various accords of the G-8's Evian summit. These accords stipulate additional efforts to prevent terrorists from obtaining MANPADS. Russia started registering serial numbers of all available MANPADS in 2002.[217] MANPADS production, storage and exports are also being watched more closely than before.[218]

B. CIS INTERVENTION

All of the states of the former Soviet Union possess at least some elements of a national export control system.[219] They differ in the degree to which they have developed these elements and in the extent to which they have moved beyond mere policies for each of these elements toward actual implementation.[220]

Most of the non-Russian arms production capacity of the former Soviet Union was located in Ukraine.[221] The country's economy depended heavily on its machine building and metal working industries. These industries primarily manufactured arms subassemblies for shipment to Russia and did not have an independent capacity for system integration.[222] After the collapse of the Soviet Union, Ukraine has lost much of its traditional market while the nature of it industrial activity complicates the formation of new relationships.[223]

"Ukraine was in a relatively unique position in that as a front-line (first echelon) Soviet republic it possessed and inherited the best quality and large volumes of military

216 "G8 Countries Need Russia's Anti-terrorist Experience," Pravda, 20 FEB 2004, <www.pravda.com>, accessed September 16, 2004.

217 Ibid.

218 Ibid.

219 Suzette Grillot, Keith D. Wolfe, and Michael Beck, "FSU Export Control Development: The Facts that Matter," *Arms on the Market: Reducing the Risk of Proliferation in the Former Soviet Union*, edited by Gary K. Bertsch and Suzette R. Grillot. New York: Routledge, 1998, p. 214.

220 Ibid.

221 Anthony, p. 24.

222 Ibid.

223 Ibid.

equipment. Much of this was superfluous to Ukraine's security needs after 1992, and it is not surprising that much of it [Ukrainian arms] found its way abroad, often illicitly."[224]

Ukrainian arms surfaced all over the world in the 1990's including C-300 missile batteries on both the Muslim and Croat sides in the Bosnian conflict during the arms embargo.[225] Ukrainian MI-17 transport helicopters were used against Tamil separatists in Sri Lanka.[226] MiGg-29s, artillery, and anti-aircraft guns from Ukraine were used by southern Yemen in its "secessionist drive."[227] Peru used Ukrainian light weapons and missile launchers in a border conflict with Ecuador.[228] Various Ukrainian weapons also turned up in civil wars in Sierra Leone, Liberia, and Rwanda.[229] Iran was one of Ukraine's most highly prolific clients and received numerous Ukrainian MiG-29 fighters, tanks, and anti-ship missiles.[230]

However, Ukraine has recently agreed to Russia's proposals on tightening control over the transfer of MANPADS in the framework of the European initiative. Russia developed the initiative to tighten control over the transfer of SA-7 and SA-14 MANPADS in June of 2003.[231]

The Russian Federation is becoming an influential partner in the context of anti-terrorist operations and the G-8 countries need Russia's experience.[232] Moscow participated in the work of the G-8's counter-terrorist group, whose members coordinated aid to other countries and helped to expand their counter-terrorist potential. This

224 Taras Kuzio, "Ukraine's Decade-Long Illegal Trade in Arms," *Radio Free Europe/ Radio Free Liberty RFE/RL Crime, Corruption, and Terrorism Watch*, Vol. 2, Issue no. 1, January 2002, <http://www.taraskuzio.net/media/arms_trade.pdf>, accessed February 15, 2005, p.1.

225 Ibid, p.3.

226 Ibid.

227 Ibid.

228 Ibid.

229 Ibid.

230 Ibid.

231 "Ukraine Ready to Discuss Russia's Proposals on Tightening MANPADS Sales," *Pravda*, 30 JUL 2003, <www.pravda.com>, accessed September 16, 2004.

232 "G8 Countries Need Russia's Anti-terrorist Experience," *Pravda*, 20 FEB 2004, <www.pravda.com>, accessed September 16, 2004.

included technical assistance and personnel-training programs where Russia rendered assistance to CIS countries as well as a number of Third World nations.[233]

Russia and the members of the Commonwealth of Independent States (CIS) have agreed to take steps against the unauthorized proliferation of MANPADS. The agreement pledges the members to provide notification of the export or import of MANPADS systems. All countries except Turkmenistan signed an agreement at the September 2003 CIS summit in Yalta.[234] This action followed an initiative from the Russian defense ministry on control of the export of MANPADS made at the Group of 8 summit in Evian in June of 2003.[235]

The development of nonproliferation export controls in the Central Asian states of Turkmenistan, Uzbekistan, Tajikistan, and Kyrgyzstan has been a slow process.[236] "The Central Asia region as a whole is characterized by the absence of export control development, the only important distinction among the four states being that Kyrgyzstan alone possesses a targeted legal framework."[237] The agreement by the CIS countries pledges the members to provide notification of the export or import of such systems. Russian Defense Minister Sergey Ivanov reported that the agreement required considerable work and that Georgia, Ukraine and Azerbaijan required extensive effort by Russia to get them to join the agreement.[238]

C. RUSSIAN FOREIGN POLICY AND WESTERN ALIGNMENT

Along with desiring a reduction in illegal MANPADS transfers, President Putin's Western alignment had clear political intentions. With the Cold War and its "zero sum game" of Realism a relic of the past, Putin's decision was clearly a rational one:

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233 "G8 Countries Need Russia's Anti-terrorist Experience," *Pravda*, 20 FEB 2004, <www.pravda.com>, accessed September 16, 2004.

234 David C. Isby, "Russia, CIS to Control MANPADS Exports," *Jane's Missiles and Rockets*, November 1, 2003, <www4.janes.com>, accessed June 26, 2004, p.1.

235 Ibid.

236 Liam Anderson, "Central Asia: The Absence of Incentives," *Arms on the Market: Reducing the Risk of Proliferation in the Former Soviet Union*, edited by Gary K. Bertsch and Suzette R. Grillot. New York: Routledge, 1998, p. 159.

237 Ibid, p. 173.

238 Ibid.

> Aligning Russia with the United States in the struggle against Al-Queda and the Taliban was but an eye-catching manifestation of a more basic strategic decision to throw Russia's lot in with the West. By doing so, Putin not only put an end to much post-Cold War uncertainty and equivocation, but also reconciled himself to what can only be a junior partnership with the United States- one in which Russia's ability to contest objectionable U.S. policies may be no greater than any U.S. ally and perhaps a good deal less than some.[239]

The aftermath of the 11 September attacks saw a warming of external relations between the U.S. and Russian administrations.[240] However, it would have been poor policy for Russia to have opposed the U.S. campaign against Al-Queda and the Taliban in Afghanistan considering Russia's own security interests. The Taliban regime was the only 'state' to have recognized Chechen independence and international Sunni Islamist volunteers allied to Al-Queda and backed by the Taliban play an important part in the Chechen resistance and a key part in the 1999 invasion of Dagestan.[241] The radical Islamists have been linked to massive terrorist attacks in Russia and were key suspects in the August 2004 destruction of two Russian commercial airline flights. "In Central Asia, Sunni Islamist forces previously based in Afghanistan and backed by the Taliban are a potentially mortal danger to regional stability, pro-Russian regimes, Russian influence, and ultimately, Russia's own borders."[242]

It is clear that Russia desires to align with the west in MANPADS counter-proliferation. Russia's Defense Minister Sergei Ivanov stated in January of 2005 that "the fight to prevent proliferation of weapons of mass destruction tops the list of issues Russian and U.S. defense officials are working together to solve."[243] Ivanov stated that the most "overriding" issue Ivanov MANPADS because the issue is "fundamentally important not only for the United States-Russia relationship but also for global security as

239 Robert Legvold, "All the Way," *The National Interest*, Winter 2002/2003, p. 21-22.

240 Anatol Lieven, "The Secret Policemen's Ball: the United States, Russia and the International Order After 11 September," *International Affairs*, no.2, p. 252.

241 Ibid.

242 Ibid.

243 Terri Lukach, *American Forces Press Service*, Washington, January 12, 2005, p.1.

a whole' and said that "production and storage of Russian MANPADS are now rigidly controlled."[244]

Alexander Vershbow, the U.S. Ambassador to Russia, praised the desire of the Russian Federation to mitigate the MANPADS threat and commented on joint U.S.-Russian counter-proliferation projects.

> We are now working closely with Russia to accelerate efforts to destroy excess or obsolete MANPADS, to strengthen controls on the transfer of MANPADS production technology, and to improve methods for enhancing MANPADS identification techniques and countermeasures against smuggling. This illustrates that Moscow understands that vital importance of ensuring that dangerous weapons not fall into the hands of terrorists.[245]

D. THE RUSSIA FEDERATION AND U.S. JOINT STING OPERATION

In 2003 U.S. and Russian governments arrested three arms dealers in a New Jersey sting operation for attempting to sell one of 200 Russian SA-18 missiles to a Sudanese terrorist (an undercover FBI agent). A British national was arrested in New Jersey after he tried to sell what he thought was a Russian shoulder-launched missile to undercover FBI agents.[246] "During the course of the sting operation which eventually snared [British national] Hemant Lakhani [and others], tapes were made of the alleged arms dealer praising Osama Bin Laden; implicit was the idea that the shoulder-launched missile involved in the operation would be used against commercial aircraft."[247]

This arrest has clearly shown how well international cooperation can work against proliferation and consequently terrorism. The sting operation was the result of an eighteen-month collaboration between U.S., U.K., and Russian law enforcement agencies. "Involved in this operation were videos and audio tapes of meetings, financial arrangements to pay for the missile, and the mockup of a missile that would be used to fool Lakhani into thinking that he was seeing a working SA-18 system."[248]

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244 Lukach, p.1.

245 Alexander Vershbow, "Remarks at the Woodrow Wilson School of Public and International Affairs," Princeton University, November 16, 2004.

246 Samson, p.1.

247 Ibid.

248 Ibid, p.2.

Questions were raised about the length of the operation and if it was warranted under cost-benefit analysis.[249] At the very least, it showed that three intelligence agencies were able to share information and collaborate together on what was perceived to be a threat to security. Particularly impressive is the data-sharing between U.S. and Russian intelligence agencies, which would have been unheard of just a few years ago.[250]

E. CRITIQUE OF THE RUSSIAN FEDERATION'S EFFORTS

When the Soviet Union collapsed Western policy makers were concerned over the arms proliferation threat from the most militarized Former Soviet Union (FSU) state of Russia. Russia's ability to control and safeguard its vast stockpiles of weapons of mass destruction, related technologies, and sensitive design information possessed by weapons scientists and engineers was under critical skepticism.[251] The multiple layers of the Soviet security system designed to protect military secrets, technologies, and information was abandoned and many in the West feared that Russian exporters of high-technology and military-enabling items would sell anything in an attempt to earn desperately needed funds and capitalize on Russia's domestic turmoil.[252]

Today, the Russia Federation is overtly concerned about the proliferation of arms in the world and understands the MANPADS threat to commercial aviation. The country has taken steps to tighten controls over the export, manufacture, and sale of MANPADS while intensifying the fight against their illicit trafficking.[253] Although compliant with MANPADS export controls and the Wassenaar Arrangement, Russia's legacy of proliferation is still apparent as MANPADS illegally transferred from the former Soviet Union are on the black market.

The cases of proliferation and export control adoption by the former Soviet states suggest that interaction with the United States played a role in their efforts to develop

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249 Samson, p.2.

250 Ibid, p.3.

251 Beck, p.31.

252 Ibid.

253 Petr Litavarin, "Proliferation of Light Weapons and Small Arms: Russia's Position," *Yadernyy Kontrol*, July-August 1999, <www.nsiat.org>, accessed October 28, 2003.

national systems of export control.[254] "There also appears to be a correlation between the amount of interaction (export control conferences, training seminars, etc.) with Western states and the level of export control development."[255]

The Russian Federation took the lead in getting the members of the Commonwealth of Independent States (CIS) to take steps against the unauthorized proliferation of MANPADS. All CIS countries except Turkmenistan signed an agreement at the September 2003 CIS Summit in Yalta.[256] This action followed an initiative from the Russian defense ministry on control of the export of MANPADS made at the Group of 8 summit in Evian in June of 2003.[257]

The joint 2003 sting operation is a watershed event in MANPADS counter-proliferation because it showed the Russian Federation's willingness to work with other countries to stop illegal arms transfers. Critics have wrongly down played this victory by stating it only proves that if somebody wants to sell missiles they will always find a buyer. On the contrary, this joint operation proves that if someone tries to buy missiles illegally they can expect to spend the rest of their life in prison. If this is demonstrated repeatedly the number and enthusiasm of potential buyers could be significantly impacted and the Russia's willingness to participate strengthened.[258]

The Russian Federation is a key player in MANPADS counter-proliferation because it is both a former producer and a country concerned with the MANPADS threat. The Russian Federation is in the same position as all Wassenaar Arrangement participants. All of the WA countries and the world face the MANPADS threat to commercial and military aviation and the difficult prospect of stopping their illegal transfer.

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254 Suzette R. Grillot, Keith D. Wolfe, and Michael Beck, "FSU Export Control Development: The Factors That Matter," *Arms on the Market: Reducing the Risk of Proliferation in the Former Soviet Union,* edited by Gary K. Bertsch and Suzette R. Grillot, New York: Routledge, 1998, p. 223.

255 Ibid.

256 Isby, p.1.

257 Ibid.

258 Ibid.

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VI. A NEW APPROACH TO MITIGATING THE MANPADS THREAT

This thesis began by outlining the various aspects of the MANPADS threat. The subsequent three chapters identified and critiqued the efforts of international agencies, the United States, and the Russian Federation to mitigate the MANPADS threat. Although most efforts are well intentioned, analysis revealed that each effort has its fallacies. Although combining all means of countering the MANPADS threat is a necessity, it alone is not enough. A new approach to mitigating the MANPADS threat is necessary to reduce or prevent the feasibility and probability of a MANPADS attack on a commercial airliner or military aircraft.

This chapter introduces a new approach to mitigating the MANPADS threat by first reviewing the 1997 Mine Ban Treaty. The main mechanism of the Mine Ban Treaty, the Landmine Monitor, will be discussed and analyzed. Finally, elements of the Mine Ban Treaty and Landmine Monitor will be recommended for adaptation to mitigate the MANPADS threat.

A. THE 1997 MINE BAN TREATY (OTTAWA TREATY)

The 1997 Mine Ban Treaty is an international agreement that bans antipersonnel land mines.[259] The treaty's official title is the "1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction" and is also referred to as the Ottawa Convention or Ottawa Treaty.[260] The treaty includes provisions for mine use, production, trade, victim assistance, mine clearance, and stock pile destruction.[261] The treaty committed countries to stop making, using, stockpiling, or transferring mines and committed those with countries with mines in the ground to remove them within the next ten years.[262]

259 "Convention on the Prohibition of the Use, Stockpiling, Production and Transfer 0f Anti-Personnel Mines and on Their Destruction," International Campaign to Ban Landmines, //www.icbl.org/treaty/text/English>, accessed February 14, 2005, p. 2.

260 Ibid.

261 Ibid.

262 Ibid.

The banning of anti-personnel land mines to include their production, stockpiling, sale, export, and use was the object of a movement started in the United States. The treaty reflects the efforts of a coalition of popular figures, governments, and non-governmental groups.[263] American international relations expert Jody Williams led the grassroots effort and shared the Nobel Peace Prize for her coordinating efforts.[264] The Arms Project of the Human Rights Watch, the International Campaign to Ban Landmines, and a coalition of over 450 veterans, human rights, arms control, developmental, and medical groups in forty countries also spear headed the treaty.[265]

One hundred and twenty-one countries signed the initial treaty and pledged $500 million to implement it.[266] The treaty became binding under international law in March of 1999. The treaty is still open for ratification by signatories and for accession by those that did not sign before March 1999.[267]

Initial pledges included $87 million by the United States (to increase by $20 million after a year), $70 million by the European Union, $24 million by Norway, $16 million by Japan, $14 million by Canada and $11 million by Germany.[268] However, major military powers like the United States, Russia, China, and most Middle Eastern nations did not sign the treaty believing a need for some land mines still remained.[269] U.S. military advisors insisted that land mines were needed along the demilitarized zone in Korea and in the Arabian Gulf desert. It was also argued that mines were a good way to "channel" enemy troops on the move and an inexpensive way to protect American soldiers.[270]

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263 "Mine Ban Treaty 101," International Campaign to Ban Landmines, <http://www.icbl.org/tools/faq/treaty>,accessed February 11, 2005, p.1.

264 Joseph S. Nye Jr., *The Paradox of American Power*, Oxford: Oxford University Press, 2002, p. 41.

265 Pierre, p. 409.

266 "Mine Ban Treaty 101," International Campaign to Ban Landmines, <http://www.icbl.org/tools/faq/treaty>,accessed February 11, 2005, p.1.

267 Ibid.

268 Pierre, p. 409.

269 Ibid.

270 Ibid, p. 409-410.

> Even though 135 countries have signed the Ottawa Treaty as of April 1999, some claim that this treaty is simply a "feel-good" agreement that lacks any teeth. Over fifty states have not signed the treaty, including the United States, China, and Russia. Despite the difficulty with reaching a comprehensive agreement that incorporates these countries, the land mine ban, as well as other future conventional arms control agreements, will have a net benefit for the environment through reclamation of land necessary for economic well-being and rebuilding of communities via reduced potential for conflict and physical security.[271]

However, the implementation of the Ottawa Treaty took on a human security and an economic security aspect by providing security for the human environment. The raised the productivity of the affected countries by reducing death and maiming due to landmines.[272]

> Because landmines deny communities access to their economic resources by rendering pasture and arable land, water sources, woodland, roads and bridges unusable, the treaty provides benefits by launching efforts to reclaim the land. Removal of landmines eradicates a source of food insecurity and poverty associated with hampered movement and social and economic isolation.[273]

B. LANDMINE MONITOR

In June 1998, the International Campaign to Ban Landmines established "Landmine Monitor" as a reporting network to systematically monitor and document nations' compliance with the 1997 Mine Ban Treaty and the humanitarian response to the global landmine crisis.[274] Landmine Monitor complements the existing state based reporting and compliance mechanisms established by the Mine Ban Treaty.

The Landmine Monitor system consists of a Global Reporting Network and an Annual Report, as well as periodic Fact Sheets and independently published Country

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271 Pierre, p. 409-410.

272 Cassady B. Craft and Suzette R. Grillot, "The Fourth Rational: Conventional Arms Control and the Reclamation of the Environment," *Arms Control and the Environment*, edited by Lakshman D. Guruswamy and Suzette R. Grillot, New York: Transnational Publishers, 2001, p.201.

273 Ibid, p.201-202.

274 "About Landmine Monitor," International Campaign to Ban Landmines, <http://www.icbl.org/lm/2004/about/>, accessed February 5, 2005.

Reports.[275] Six annual reports have been released to date from 1999-2004. These reports have been widely hailed as vital documents.[276] "While not a technical verification system or formal inspection regime, Landmine Monitor is another important mechanism for holding governments accountable to their treaty obligations."[277]

1. The Role of Non-governmental Organizations (NGOs)

A "Core Group" was established to develop and coordinate the Landmine Monitor system. This Core Group consists of the following five non-governmental organizations: Human Rights Watch, Handicap International, Kenya Coalition Against Landmines, Mines Action Canada, and Norwegian People's Aid.[278] Human Rights Watch serves as the lead agency.[279] The Core Group assumes overall responsibility and decision making on the Landmine Monitor System.[280]

Each non-governmental organization has a specific role in supporting the Landmine Monitor. Human Rights Watch concentrates on banning land mines.[281] Handicap International Belgium is responsible for mine risk education and survivor assistance.[282] The Kenya Coalition Against Landmines, Mines Action Canada, and Norwegian People's Aid are responsible for actions against land mines and enforcing the Mine Ban Treaty in their respective areas.[283] Various other regional and local groups are also involved.

"NGOs play a crucial role in encouraging compliance with and universalization of the treaty. They make public statements condemning and stigmatizing any breach of the treaty and seek clarification about the interpretation or application of certain elements of

275 About Landmine Monitor," International Campaign to Ban Landmines, <http://www.icbl.org/lm/2004/about/>, accessed February 5, 2005.

276 Ibid.

277 Landmine Monitor 2004 Process," International Campaign to Ban Landmines, <http://www.icbl.org/lm/2004/about/>, accessed February 8, 2005.

278 Ibid.

279 Ibid.

280 Ibid.

281 "Landmine Monitor Contacts," International Campaign to Ban Landmines, <http://www.icbl.org/lm/contacts.php3>, accessed February 10, 2005.

282 Ibid.

283 Ibid.

the treaty."[284] The work of NGOs is done during intersessional and annual meetings and through action alerts and campaign activities.[285] "More generally too, NGOs help to strengthen the international norm against any use or possession of antipersonnel mines by anyone, which is essential for the successful implementation of the treaty."[286]

2. The Sixth Landmine Monitor Report

The sixth annual report by the International Campaign to Ban Landmines (ICBL) was released on November 18, 2004.[287] It was distributed to governments attending the first Review Conference of the Mine Ban Treaty from November 29 – December 3, 2004 in Nairobi, Kenya.[288] The Landmine Monitor report reveals that non-governmental organizations have united in a coordinated way to monitor a humanitarian law or disarmament treaty and to regularly document progress and problems to successfully put into practice the concept of civil society based-verification.[289]

The landmine monitor system features a global reporting network and an annual report.[290] A network of 110 Landmine Monitor researchers from 93 countries gathered information to prepare the 2004 report.[291] The researchers are from the International Committee to Ban Land Mines (ICBL) and work in the fields of academics and journalism.[292]

A key point is that Landmine Monitor is not a technical verification system or a formal inspection regime:

> It is an attempt by civil society to hold governments accountable to the obligations they have taken on with respect to antipersonnel landmines. This is done through extensive collection, analysis and distribution of publicly available information. Although in some cases it does entail

284 "What role do NGOs play in treaty implementation?" International Campaign to Ban Landmines, <http://www.icbl.org/tools/faq/treaty/ngos>, accessed February 10, 2005.

285 Ibid.

286 Ibid.

287 "About Landmine Monitor," <http://www.icbl.org/lm/about>, accessed February 10, 2005, p.1.

288 Ibid.

289 Ibid.

290 Ibid.

291 Ibid.

292 Ibid.

> investigative missions, Landmine Monitor is not designed to send researchers into harm's way and does not include hot war-zone reporting.[293]

Landmine Monitor is designed to complement the transparency of states and other parties in required reporting required under Article 7 of the Mine Ban Treaty.[294] "It [Landmine Monitor] reflects the shared view that transparency, trust and mutual collaboration are crucial elements of the successful eradication of antipersonnel mines. Landmine Monitor was also established in recognition of the need for independent reporting and evaluation."[295]

The Landmine Monitor Report 2004 contains information on every country in the world to include landmine ban policy, use, production, transfer, stockpiling, mine action funding, mine clearance, mine risk education, landmine casualties, and survivor assistance.[296] It does not only report on state's treaty obligations, but reviews both signatory states and non-signatories as well.[297] Appendices with information from key players in mine action, such as UN agencies and the International Committee of the Red Cross were also included.[298]

> As was the case in previous years, Landmine Monitor acknowledges that this ambitious report has its shortcomings. The Landmine Monitor is a system that is continuously updated, corrected and improved. Comments, clarifications, and corrections from governments and others are sought, in the spirit of dialogue and in the common search for accurate and reliable information on a difficult subject.[299]

293 "About Landmine Monitor," <http://www.icbl.org/lm/about>, accessed February 10, 2005, p.1.

294 Ibid.

295 Ibid.

296 Ibid.

297 Ibid.

298 Ibid.

299 "About Landmine Monitor," <http://www.icbl.org/lm/about>, accessed February 10, 2005, p.1.

C. THE MULTI-LEVEL MINE BAN TREATY APPROACH ADAPTED TO MANPADS (THE SOLUTION)

Having discussed the provisions of the Mine Ban Treaty and the mechanisms of Landmine Monitor, certain elements of these entities are adaptable to mitigating the MANPADS threat. While not the same type of weapon per se, both land mines and MANPADS are weapons that affect human security as previously discussed in this thesis. Thus, certain elements of the solution to the land mine problem can be used to counter the MANPADS threat.

The Mine Ban Treaty features a multi-level approach that addresses the mine ban issue from different angles. The following elements of this approach can be adopted in the case against MANPADS non-proliferation:

"Ensure that all countries join the Mine Ban Treaty and undertake to never again produce, use or sell antipersonnel land mines."[300] Many countries would support a MANPADS treaty because of the human security issue at stake. The key issue here is that a global treaty for MANPADS non-proliferation needs to be promulgated.

"Make sure that once a State joins, it fully implements the Mine Ban Treaty e.g. by submitting transparency reports, meeting deadlines for stockpile destruction and mine clearance, and assisting the victims of land mines."[301] This is where the role of NGOs becomes crucial. The Core Group of Landmine Monitor is able to watch different facets of the treaty and track what information each member state has or has not submitted. A MANPADS Monitor could perform the same function.

"Ensure that countries outside of the Mine Ban Treaty abide by the spirit of the agreement and refrain from use, production, and stock piling of the weapon."[302] Another key element directly related to the success or failure of a hypothetical treaty for MANPADS. Again, in order for this to work to solve the MANPADS problem, an international treaty needs to be established in the first place. Additionally, making the treaty international law is paramount to give the whole effort political teeth.

300 "The Solution," International Campaign to Ban Landmines, <www.icbl.org/problem/solution>, accessed February 5, 2005.

301 Ibid.

302 Ibid.

"Persuade non state actors to ban land mines and abide by the spirit of the treaty" and "condemn any use or production by a state or non-state actor."[303] The most difficult part of any potential MANPADS treaty would be to persuade non-state actors to abide by the treaty. The idea of human security cannot be sold to terrorist groups such as Al-Queda since human security is the center of gravity terrorist groups strive to exploit. Additionally, condemning MANPADS use by a non-state actor inherently means that some element of the non-proliferation entity failed since the use of MANPADS has occurred. Still, addressing non-state actors in a proposed MANPADS treaty leaves the door open for non-state actor participation. Additionally, this could work as a vehicle to suppress the demand problem for MANPADS.

"Even countries without a mine problem have an important role. They have a moral obligation to join the Mine Ban Treaty and promote it and, where possible, to provide assistance to mine-affected states. Countries that have traded the weapon, should stop and those with large mine stockpiles should destroy these. State parties to the Mine Ban treaty have a legal obligation to promote it."[304] This is another concept adaptable to MANPADS since the issue at question is one of human security and is applicable to all countries. Countries that have turned in MANPADS or destroyed stockpiles because of a reduced need to deploy them could be granted favors or paybacks in the international community.

The bottom line is that for elements of the Mine Ban treaty to be adapted to MANPADS there has to be an international treaty against illegal MANPADS proliferation which is supported by international law. A lead agency to enforce this treaty, perhaps called MANPADS Monitor needs to be created and implemented. The treaty and its controlling mechanisms must incorporate non-state actors. Finally, the role of NGOs would be crucial to properly enforce the treaty.

The following table summarizes the current problems with MANPADS non-proliferation efforts and the "solutions" presented in the Mine Ban Treaty:

303 "The Solution," International Campaign to Ban Landmines, <www.icbl.org/problem/solution>, accessed February 5, 2005.

304 Ibid.

Table 3. MANPADS (The Problem) and The Mine Ban Treaty (The Solution)

No Lead Agency	**Landmine Monitor**
No International Authority	**International Law**
Non-state actors not considered	**Non-state actors considered**
NGOs not involved	**NGOs play major role**

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VII. CONCLUSION

This thesis identified MANPADS as a realistic threat to commercial aviation and military aircraft. The weapons are capable and are in the hands of numerous non-state actors and terrorist groups throughout the world. International agencies, the U.S., and the Russian Federation have each developed their own mechanisms to mitigate the MANPADS threat.

Although each of these controlling mechanisms has promise, their execution has been questionable. The major problems with the UN Register of Conventional Arms and the Wassenaar Arrangement are that MANPADS data (imports, exports, holdings, etc.) is submitted on a voluntary basis. The problem with export controlling entities is that they do not address the problem of demand. The U.S. MANPADS Defense Act of 2004 directed domestic and international action to counter the MANPADS threat. The U.S. Department of Homeland Security supports the installation of missile countermeasure systems on commercial airliners as its primary means of solving the MANPADS problem. Studies indicate that this is not yet technologically feasible let alone cost effective. The Russian Federation's efforts to counter the MANPADS threat have aligned the country with the west. However, Russia's interest is primarily domestic as it hopes to reduce the number of MANPADS used by the rebels in Chechnya.

The Mine Ban Treaty of 1997 provides some mechanisms that can be adapted to mitigate the MANPADS threat. The International Campaign to Ban Landmines created Landmine Monitor as the clear overarching entity. International law has played a major role in enforcing the Ottawa Treaty. The Mine Ban Treaty includes provisions for non-state actors while NGOs play crucial roles. These elements and provisions of Landmine Monitor can be applied to mitigating the MANPADS threat since both MANPADS and landmines are threats where human security is the primary concern.

The conclusion of this thesis is that a MANPADS attack is imminent because existing agencies and efforts are inadequate to mitigate the MANPADS threat. A new approach incorporating elements of the 1997 Mine Ban Treaty and the Landmine Monitor is necessary to reduce the threat of a MANPADS attack on commercial or military

aircraft. Although this thesis attempted to define the threat, analyze current efforts to mitigate the threat, and introduce a new approach to counter the threat, certain concepts warrant additional research.

Initially, with vast numbers of MANPADS in the hands of terrorists, maintaining the current status quo of counter-proliferation and non-proliferation mechanisms is not an option. However, if these non-state actors and terrorist groups do have this vast amount of MANPADS at their disposal and the capability to deploy them, why haven't they done so on a much larger scale?

Second, this thesis revealed that installing missile counter measure systems on commercial airliners is not the best way to mitigate the MANPADS threat. However, the U.S. will continue its research and development until a missile countermeasure system is deployed in some capacity on commercial airliners. When this day arrives, what will be the impact on the American flying public and its reaction? What will be the international reaction of U.S. allies? How will the U.S. spread this new technology?

Finally, is there any common denominator or information gleaned from studying the recorded attempts to shoot down commercial airliners and military aircraft with MANPADS? Technical information about shelf life, missile performance compared to environment, and the specifics about the actual shot (location, set-up time, missile-detection time, etc.) would prove invaluable in revising and developing new measures to mitigate the MANPADS threat.

APPENDIX A: ELEMENTS FOR EXPORT CONTROLS OF MAN-PORTABLE AIR DEFENCE SYSTEMS (MANPADS)[305]

(Agreed at the 2003 Plenary)

Recognizing the threats posed by unauthorised proliferation and use of Man-Portable Air Defence Systems, especially to civil aviation, peace-keeping, crisis management and anti-terrorist operations, Participating States affirm that they apply strict national controls on the export of MANPADS.

1. Scope.

1.1 These Elements cover:

a) surface-to-air missile systems designed to be man-portable and carried and fired by a single individual; and

b) other surface-to-air missile systems designed to be operated and fired by more than one individual acting as a crew and portable by several individuals.

1.2 National export controls apply to the international transfer or retransfer of MANPADS, including complete systems, components, spare parts, models, training systems, and simulators, for any purpose, by any means, including licensed export, sale, grant, loan, lease, co-production or licensing arrangement for production (hereafter "export"). The scope of export regulation and associated controls includes research, design, development, engineering, manufacture, production, assembly, testing, repair, maintenance, servicing, modification, upgrade, modernisation, operation, use, replacement or refurbishment, demilitarisation, and destruction of MANPADS; technical data, software, technical assistance, demonstration, and training associated with these functions; and secure transportation, storage. This scope according to national legislation may also refer to investment, marketing, advertising and other related activity.

1.3 Any activity related to MANPADS within the territory of the producing country is subject to national laws and regulations.

305 "Elements for Export Controls of MANPADS," Wassenaar Arrangement website, www.wa.org, accessed June 15, 2004, p.2.

2. Control Conditions and Evaluation Criteria.

2.1 Decisions to permit MANPADS exports will be made by the exporting government by competent authorities at senior policy level and only to foreign governments or to agents specifically authorised to act on behalf of a government after presentation of an official EUC certified by the Government of the receiving country.

2.2 General licences are inapplicable for exports of MANPADS; each transfer is subject to an individual licensing decision.

2.3 Exporting governments will not make use of non-governmental brokers or brokering services when transferring MANPADS, unless specifically authorised to on behalf of the government.

2.4 In order to prevent unauthorised use, producer countries will implement technical performance and/or launch control features for newly designed MANPADS as such technologies become available to them.
Such features should not adversely affect the operational effectiveness of MANPADS for the legal user.

2.5 Exporting governments in the Wassenaar Arrangement will report transfers of MANPADS as part of the Arrangement's Specific Information Exchange reporting requirements.

2.6 MANPADS exports will be evaluated in the light of the Wassenaar Arrangement Initial Elements and the Wassenaar document "Elements for Objective Analysis and Advice Concerning Potentially Destabilising Accumulations of Conventional Weapons" and any subsequent amendments thereto.

2.7 Decisions to authorise MANPADS exports will take into account**:**

- Potential for diversion or misuse in the recipient country;
- The recipient government's ability and willingness to protect against unauthorised re-transfers, loss, theft and diversion; and
- The adequacy and effectiveness of the physical security arrangements of the recipient government for the protection of military property, facilities, holdings, and inventories.

2.8 Prior to authorising MANPADS exports, the exporting government will assure itself of the recipient government's guarantees:

- not to re-export MANPADS except with the prior consent of the exporting government;
- to afford requisite security to classified material and information in accordance with applicable bilateral agreements, to prevent unauthorised access or compromise;

- to inform promptly the exporting government of any instance of compromise, unauthorised use, loss, or theft of any MANPADS material.

2.9 In addition, the exporting government will satisfy itself of the recipient government's willingness and ability to implement effective measures for secure storage, handling, transportation, use of MANPADS material, and disposal or destruction of excess stocks to prevent unauthorised access and use. The recipient government's national procedure designed to attain the requisite security include, but are not limited to, the following set of practices, or others that will achieve comparable levels of protection and accountability:

- Written verification of receipt of MANPADS shipments.
- Inventory by serial number of the initial shipments of all transferred firing mechanisms and missiles, if physically possible; and maintenance of written records of inventories.
- Physical inventory of all MANPADS subject to transfer, at least once a month; account by serial number for MANPADS components expended or damaged during peacetime.

- Ensure storage conditions are sufficient to provide for the highest standards of security and access control. These may include:
  -- Where the design of MANPADS permits, storing missiles and firing mechanisms in locations sufficiently separate so that a penetration of the security at one site will not place the second site at risk.
  -- Ensuring continuous (24-hour per day) surveillance.
  -- Establishing safeguards under which entry to storage sites requires the presence of at least two authorised persons.

- Transport MANPADS in a manner that provides for the highest standards and practices for safeguarding sensitive munitions in transit. When possible, transport missiles and firing mechanisms in separate containers.

- Where applicable, bring together and assemble the principal components - typically the gripstock and the missile in a launch tube - only in the event of hostilities or imminent hostilities; for firing as part of regularly scheduled training, or for lot testing, for which only those rounds intended to be fired will be withdrawn from storage and assembled; when systems are deployed as part of the point defences of high priority installations or sites; and in any other circumstances which might be agreed between the receiving and transferring governments.

- Access to hardware and any related classified information will be limited to military and civilian personnel of the receiving government who have the proper security clearance and who have an established need to know the information in order to perform their duties. Any information released will be limited to that necessary to perform assigned responsibilities and, where possible, will be oral and visual only.

- Adopt prudent stockpile management practices that include effective and secure disposal or destruction of MANPADS stocks that are or become excess to national requirements.

2.10 Participating States will, when and as appropriate, assist recipient governments not capable of executing prudent control over MANPADS to dispose of excess stockpiles, including buying back previously exported weapons. Such measures are subject to a voluntary consent of the exporting government and the recipient state.

2.11 Exporting governments will share information regarding potential receiving governments that are proven to fail to meet the above export control guarantees and practices outlined in paragraphs 2.8 and 2.9 above.

2.12 To enhance efforts to prevent diversion, exporting governments will share information regarding non-state entities that are or may be attempting to acquire MANPADS.

3. Participating States will ensure that any infringement of export control legislation, related to MANPADS, is subject to adequate penalty provisions, i.e. involving criminal sanctions.

4. The Participating States will exchange information and review progress related to the implementation of these steps regularly.

5. Participating States agree to promote the application of the principles defined in these Elements to non-Wassenaar members.

APPENDIX B: H.R. 4056 [306]

108th CONGRESS
2d Session
H. R. 4056
IN THE SENATE OF THE UNITED STATES
September 7, 2004

Received; read twice and referred to the Committee on Commerce, Science, and Transportation

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AN ACT

To encourage the establishment of both long-term and short-term programs to address the threat of man-portable air defense systems (MANPADSs) to commercial aviation.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

1. SECTION 1. SHORT TITLE.

This Act may be cited as the `Commercial Aviation MANPADS Defense Act of 2004'.

2. SEC. 2. FINDINGS.

Congress finds the following:

(1) MANPADSs constitute a threat to military and civilian aircraft.

(2) The threat posed by MANPADSs requires the development of both short-term and long-term plans.

(3) The threat posed by MANPADSs requires an international as well as domestic response.

(4) There should be an international effort to address the issues of MANPADSs proliferation and defense.

(5) The Government is pursuing and should continue to pursue diplomatic efforts to prevent the proliferation of MANPADSs.

3. SEC. 3. UNITED STATES POLICY ON NONPROLIFERATION AND EXPORT CONTROL.

(a) TO LIMIT AVAILABILITY AND TRANSFER OF MANPADS- The President shall pursue, on an urgent basis, further strong international diplomatic and cooperative efforts, including bilateral and multilateral treaties, in the appropriate forum to limit the availability, transfer, and proliferation of MANPADSs worldwide.

(b) TO LIMIT THE PROLIFERATION OF MANPADS- The President is encouraged to seek to enter into agreements with the governments of foreign countries that, at a minimum, would--

306 "H.R. 4056," <www.fas.org/asmp/resources/govern/108th/HR4056ih.htm>, accessed June 12, 2004.

(1) prohibit the entry into force of a MANPADS manufacturing license agreement and MANPADS co-production agreement, other than the entry into force of a manufacturing license or co-production agreement with a country that is party to such an agreement;

(2) prohibit, except pursuant to transfers between governments, the export of a MANPADS, including any component, part, accessory, or attachment thereof, without an individual validated license; and

(3) prohibit the re-export or retransfer of a MANPADS, including any component, part, accessory, or attachment thereof, to a third person, organization, or government unless the written consent of the government that approved the original export or transfer is first obtained.

(c) TO ACHIEVE DESTRUCTION OF MANPADS- The President should continue to pursue further strong international diplomatic and cooperative efforts, including bilateral and multilateral treaties, in the appropriate forum to assure the destruction of excess, obsolete, and illicit stocks of MANPADSs worldwide.

(d) REPORTING AND BRIEFING REQUIREMENT-

(1) PRESIDENT'S REPORT- Not later than 180 days after the date of enactment of this Act, the President shall transmit to the appropriate congressional committees a report that contains a detailed description of the status of diplomatic efforts under subsections (a), (b), and (c) and of efforts by the appropriate United States agencies to comply with the recommendations of the General Accounting Office set forth in its report GAO-04-519, entitled `Nonproliferation: Further Improvements Needed in U.S. Efforts to Counter Threats from Man-Portable Air Defense Systems'.

(2) ANNUAL BRIEFINGS- Annually after the date of submission of the report under paragraph (1) and until completion of the diplomatic and compliance efforts referred to in paragraph (1), the Secretary of State shall brief the appropriate congressional committees on the status of such efforts.

4. SEC. 4. FAA AIRWORTHINESS CERTIFICATION OF MISSILE DEFENSE SYSTEMS FOR COMMERCIAL AIRCRAFT.

(a) In General- As soon as practicable, but not later than, the date of completion of Phase II of the Department of Homeland Security's counter-man-portable air defense system (MANPADS) development and demonstration program, the Administrator of the Federal Aviation Administration shall establish a process for conducting airworthiness and safety certification of missile defense systems for commercial aircraft certified as effective and functional by the Department of Homeland Security. The process shall require a certification by the Administrator that such systems can be safely integrated into aircraft systems and ensure airworthiness and aircraft system integrity.

(b) Certification Acceptance- Under the process, the Administrator shall accept the certification of the Department of Homeland Security that a missile defense system is effective and functional to defend commercial aircraft against MANPADSs.

(c) Expeditious Certification- Under the process, the Administrator shall expedite the airworthiness and safety certification of missile defense systems for commercial aircraft certified by the Department of Homeland Security.

(d) Reports- Not later than 90 days after the first airworthiness and safety certification for a missile defense system for commercial aircraft is issued by the Administrator, and annually thereafter until December 31, 2008, the Federal Aviation Administration shall transmit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that contains a detailed description of each airworthiness and safety certification issued for a missile defense system for commercial aircraft.

5. SEC. 5. PROGRAMS TO REDUCE MANPADS.

(a) In General- The President is encouraged to pursue strong programs to reduce the number of MANPADSs worldwide so that fewer MANPADSs will be available for trade, proliferation, and sale.

(b) Reporting and Briefing Requirements- Not later than 180 days after the date of enactment of this Act, the President shall transmit to the appropriate congressional committees a report that contains a detailed description of the status of the programs being pursued under subsection (a). Annually thereafter until the programs are no longer needed, the Secretary of State shall brief the appropriate congressional committees on the status of programs.

(c) Funding- There is authorized to be appropriated such sums as may be necessary to carry out this section.

6. SEC. 6. MANPADS VULNERABILITY ASSESSMENTS REPORT.

(a) In General- Not later than one year after the date of enactment of this Act, the Secretary of Homeland Security shall transmit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report describing the Department of Homeland Security's plans to secure airports and the aircraft arriving and departing from airports against MANPADSs attacks.

(b) Matters to Be Addressed- The Secretary's report shall address, at a minimum, the following:

(1) The status of the Department's efforts to conduct MANPADSs vulnerability assessments at United States airports at which the Department is conducting assessments.

(2) How intelligence is shared between the United States intelligence agencies and Federal, State, and local law enforcement to address the MANPADS threat and potential ways to improve such intelligence sharing.

(3) Contingency plans that the Department has developed in the event that it receives intelligence indicating a high threat of a MANPADS attack on aircraft at or near United States airports.

(4) The feasibility and effectiveness of implementing public education and neighborhood watch programs in areas surrounding United States airports in cases in which intelligence reports indicate there is a high risk of MANPADS attacks on aircraft.

(5) Any other issues that the Secretary deems relevant.

(c) Format- The report required by this section may be submitted in a classified format.

7. SEC. 7. DEFINITIONS.

In this Act, the following definitions apply:

(1) Appropriate congressional committees- The term `appropriate congressional committees' means--

(A) the Committee on Armed Services, the Committee on International Relations, and the Committee on Transportation and Infrastructure of the House of Representatives; and

(B) the Committee on Armed Services, the Committee on Foreign Relations, and the Committee on Commerce, Science, and Transportation of the Senate.

(2) MANPADS- The term `MANPADS' means--

(A) a surface-to-air missile system designed to be man-portable and carried and fired by a single individual; and

(B) any other surface-to-air missile system designed to be operated and fired by more than one individual acting as a crew and portable by several individuals.

Passed the House of Representatives July 22, 2004.

Attest:

JEFF TRANDAHL,

Clerk.

END

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9. U.S. Department of State
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10. Institute for Security Studies
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11. SIPRI
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12. Center for Defense Information
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13. UN Department of Disarmament Affairs
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14. Northrop Grumman
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15. BAE Systems
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